Digital Learning Framework (DLF) national evaluation: Starting off

Baseline report

Jude Cosgrove, Eva Moran, Emmet Feerick and Alice Duggan

December 2019

Educational Research Centre
Foras Taighde ar Oideachas

Cosgrove, Jude

Digital Learning Framework (DLF) national evaluation – starting off: Baseline report / Jude Cosgrove, Eva Moran, Emmet Feerick, Alice Duggan.

Dublin: Educational Research Centre.

ISBN: 978-0-900440-80-9 (pdf)

1. Digital Learning Framework – Evaluation.
2. Education – Digital technology – Ireland.
3. Education – Information technology – Ireland.
4. Digital technology – Primary schools – Ireland.
5. Digital technology – Post primary schools – Ireland.

2019

I Title II Cosgrove, Jude III Moran, Eva IV Feerick, Emmet V Duggan, Alice

371.334--dc23

DLF evaluation project ERC oversight

Jude Cosgrove – DLF evaluation lead
Alice Duggan, Emmet Feerick, Eva Moran – DLF evaluation team members
Anne Comey, Patricia Gaffney, Imelda Pluck – administrative support
Contact: dlf@erc.ie

Acknowledgements

Our thanks to the support of the DES Teacher Education Policy (Digital) Unit, which asked the ERC to conduct this national evaluation. The evaluation follows from a trial phase, also supported by the DES Teacher Education Policy (Digital) Unit, during late 2017 and 2018 (http://www.erc.ie/programme-of-work/dlf/).

We are grateful for the support, advice and guidance from the DLF advisory group on the survey design and reporting on the baseline phase of the Digital Learning Framework (DLF) evaluation. Aside from the ERC, the DLF advisory group comprises Chris Kelly, Betty Regan, Tony Shine (DES Teacher Education Policy (Digital) Unit), Séamus Knox and Tony Weir (DES Inspectorate), and Anthony Kilcoyne (PDST Technology in Education (TiE)). The group will continue to advise on the evaluation of the DLF as it progresses into its longitudinal phase in 2020.

We acknowledge and appreciate the collaboration with all of the PDST Technology in Education advisors, led by Michael McNamara. The collaboration permitted the ERC to administer the baseline survey during the PDST Technology in Education DLF seminars, which has resulted in a rich baseline survey dataset. We thank the PDST Technology in Education team for sharing their insights in focus groups during May and June 2019.

Finally, our thanks to the school leaders and teachers who attended the DLF seminars and provided us with their views and insights via the baseline survey. Their responses provide key findings and conclusions, and will assist us in identifying and better understanding specific issues as the longitudinal phase of the evaluation progresses in 2020.

List of acronyms and abbreviations

CPD	Continuing Professional Development
DEIS	Delivering Equality of opportunity In Schools
DES	Department of Education and Skills
DL	Digital Learning
DLF	Digital Learning Framework
DLP	Digital Learning Plan (of schools, to implement the DLF)
DLPG	Digital Learning Planning Guidelines
DLT	Digital Learning Team (in the school)
DT	Digital Technology/Technologies
ERC	Educational Research Centre
ETB	Education and Training Board
ICT	Information and Communication Technologies
IR	Industrial Relations
IT	Information Technologies
LAOS	Looking at Our Schools Framework (for School Self-Evaluation)
NAMER	National Assessment of Mathematics and English Reading
NCCA	National Council for Curriculum and Assessment
OECD	Organisation for Economic Co-operation and Development
PDST	Professional Development Service for Teachers
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
SEN	Special Educational Needs
SSE	School Self-Evaluation
STEM	Science, Technology, Engineering and Maths
TiE	Technology in Education (a team of the PDST responsible for resources and supports to enable schools to implement the DLF)
TIMSS	Trends in International Mathematics and Science Study
UNESCO	United Nations Educational Scientific and Cultural Organisation

Table of contents

Contents

Executive summary

E1 Introduction and context

This first (baseline) report on the Digital Learning Framework (DLF) national evaluation follows from the Trial evaluation of the DLF. The Trial was conducted in 20 post-primary and 28 primary and special schools in 2017-2018. The Trial findings inform the design and focus of the full national longitudinal evaluation of the DLF, which runs from 2018-2022. The results in this baseline report will be used as a reference point for the subsequent longitudinal data collections planned during 2020-2022.

This report contains information from three sources:

- baseline survey data from teachers and principals in all schools that attended PDST Technology in Education (TiE) DLF seminars between October 2018 and April 2019. Data are weighted such that responses are representative of the populations of primary, post-primary and special schools. In all, 1,524 responses were received from primary schools, 320 from post-primary schools, and 64 from special schools. Where more than one member of staff from a school attended a seminar, they were asked to complete the baseline survey jointly (i.e. there is one response per school);
- responses from seminar attendees to the PSDT TiE's DLF seminar evaluation survey (with 2,720 responses from primary and special schools, and 498 post-primary respondents); and
- focus group interviews with the PDST Technology in Education's DLF implementation team in May (four team members interviewed) and June 2019 (five interviewed).

The Digital Learning Framework (DLF) is a resource to assist schools to effectively embed digital technologies into teaching, learning and assessment activities, and is a key element of the national *Digital Strategy for Schools 2015-2020*. The report on the *2013 ICT Census of Schools* discussed a range of policy priorities, organised under four main themes, which also underpin the current *Digital Strategy*:

- Theme 1: Teaching, learning and assessment using ICT
- Theme 2: Teacher professional learning
- Theme 3: Leadership, research and policy
- Theme 4: ICT infrastructure.

To support the implementation of the DLF, a range of strategic supports and resources have been developed. These include:

- The design of the DLF being informed by the UNESCO ICT Competency Framework for an Irish context, drawing also from other relevant European and international frameworks, in particular the UNESCO ICT Competency Framework for Teachers.
- The alignment of the DLF with the *Looking at Our School* (school self-evaluation) framework.
- A professional development framework developed by the PDST, including national-level day-long DLF seminars, a comprehensive integrated planning and support website (www.dlplanning.ie), an online course, and a suite of webinars.
- Support for and guidance on online safety through www.webwise.ie.
- The delivery to schools, since 2017, of 110 million euro (of a total of 210 million euro) under the ICT Infrastructure Grant (for infrastructure and equipment).

The implementation of the DLF national evaluation is overseen by an advisory group consisting of representatives from the DES Teacher Education Policy (Digital) Unit, DES Inspectorate, PDST Technology in Education and ERC.

E2 Caveats for interpreting results

- While both the baseline and seminar evaluation surveys are valid in their own right, their points of reference are slightly different. The ERC survey takes the populations of primary, post-primary and special schools as its reference points, while the PDST Technology in Education takes the attendees of the DLF seminars as its reference point.
- The baseline survey weights use information that is available for the populations of schools, such as DEIS status and enrolment size. As with any survey weights, they do not account for all possible characteristics of schools.
- Qualitative data has been subject to thematic analysis to provide a concise description of key themes emerging. It is possible that another research team might have identified and prioritised somewhat different sets of themes.
- Some of the analyses include comparisons across primary, post-primary and special schools. These are intended to be interpreted in a broad way. The sectors differ in important ways (e.g. regarding curriculum, assessment, timetabling, and management) and these differences should be borne in mind when interpreting these comparisons.
- Students' perspectives were not gathered at baseline. During the longitudinal phases, however, students' viewpoints will be included.
- Inferences that can be drawn from the data are limited to a single point in time. As the longitudinal phase progresses, it will be possible to identify and describe patterns of change over time.

E3 Baseline survey results: Overall findings

Respondents

At primary level, about 70% of respondents were principals, 37% were class teachers, 28% were deputy principals, 18% were special education teachers, and 15% were assistant principals. At post-primary level, subject teachers comprised the most frequent respondent group (50.5%), with 25-35% of respondents falling into the categories of principal, deputy principal or assistant principal. In special schools, respondents were most commonly principals (50%) or class teachers (42%).

Level of embedding digital technologies in teaching, learning and assessment

In rating their current (baseline) level of embedding digital technologies in teaching, learning and assessment, respondents chose one of five options (Emerging, Developing, Intermediate, Advanced, Highly advanced).

Primary schools were significantly more likely to rate their school as emerging or developing (56%) in their current levels of practice than post-primary (41.5%) or special schools (52%). Post-primary school respondents were significantly more likely to rate their school as advanced or highly advanced (13%) in comparison with primary (7%) and special schools (6%). Note that school types may have differed in their understanding of the term 'embedding' (as it was not explicitly defined in the survey questionnaire).

Implementing the DLF

At baseline stage, post-primary schools were generally slightly further along their journey of implementing the DLF than primary and special schools. For example, 62% of post-primary schools indicated that they had commenced (or in a small number of cases completed) their Digital Learning Plans in comparison to 36% of primary schools and 43% of special schools.

Also, post-primary schools were significantly more likely than primary and special schools to specify that the Digital Learning Plan (as informed by the DLF) would feature in the overall School Planning Processes. About 64% of post-primary schools indicated that their Digital Learning Plan would feature either to a moderate or large extent, in comparison with 38% of special schools and 48% of primary schools.

Some of the top priorities identified by schools in implementing the DLF were: developing a whole-school approach; developing teachers' skills in using specific apps or software; using digital technologies to improve learning outcomes; and making improvements to the sharing of documents or resources. This confirms that schools' priorities are in line with many of the overall objectives of the DLF.

Respondents were presented with 10 different strategies to implement the DLF, and were asked about their likelihood of using each of them. The top three rated strategies for both primary and special schools were dedicated time allocated to DLF during Croke Park hours, dedicated time allocated to DLF during staff meetings, and professional development delivered by an external provider to school staff.

Post-primary schools, on the other hand, indicated that the most likely strategies that they would use were professional development delivered by some school staff (e.g. Digital Learning Team members), mentoring (e.g. digital champions in the school provide support to other school staff), and dedicated time allocated to DLF during staff meetings. These findings suggest that a train-the-trainer/internal capacity-building strategy in implementing the DLF is preferred in post-primary schools, while primary and special schools had a higher preference for externally-provided training and development. These variations could be related to school size, where it is likely to be easier to implement a mentoring approach with a larger body of staff.

All three categories of school were least likely to accord a high rating to liaising or collaborating with other local primary or post-primary schools as a strategic way to implement their Digital Learning Plans.

Digital technology infrastructure, connectivity, technical support and engagement

There was a lot of variation across schools in perceived levels of adequacy of infrastructure, connectivity, and teacher and student/pupil engagement with digital technologies. Perceived adequacy of infrastructure and connectivity (to meet the school's teaching, learning and assessment needs) was significantly and substantially higher in post-primary than primary and special schools. In contrast, the three categories of school did not differ in terms of perceived levels of pupil/student and teacher engagement with digital technologies. This could suggest that schools are rating teachers' and students' engagement with digital technologies relative to the levels of infrastructure and connectivity in place.

A majority of schools indicated that technical support for digital technologies was provided using both internal and external resources. Special schools (68%) were significantly more likely than primary (57%) or post-primary schools (63.5%) to have a mixture of internal and external technical support in the school. Primary schools (29%) were more likely than post-primary (25.5%) or special schools (21%) to rely solely on external support, while post-primary schools (10.5%) were significantly more likely than special (4%) or primary schools (6%) to rely solely on internal support.

Respondents also rated the effectiveness of technical support in their school (for issues such as keeping devices in good repair and maintaining connectivity). The perceived effectiveness of technical support was significantly and substantially higher in post-primary schools compared with primary and special schools.

E4 Baseline survey results: Variations across schools

Comparisons were made across schools as follows:

- Primary schools with varying enrolment sizes, DEIS status and gender composition
- Special schools with varying enrolment sizes
- Post-primary schools with varying enrolment size, DEIS status and sector/gender composition.

Comparisons were made under four themes, i.e. Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; Technical support; and Ratings of digital technologies. Main findings are summarised under each of the four themes, focusing on findings where statistically significant differences emerged. There was very little variation across special schools in any of these areas, so only primary and post-primary schools are the focus of this section.

Implementing the DLF

Primary schools with larger enrolment sizes were more likely to have begun development of their Digital Learning Plans than smaller primary schools. Indeed, most of the variations in DLF implementation that were statistically significant at primary level relate to school size. For example, team teaching and mentoring were implementation strategies that were significantly more likely in primary schools with the largest enrolment sizes (i.e. 251 pupils or more). Some variations by DEIS status also emerged. For example, DEIS Urban Band 1 and Urban Band 2 schools were significantly more likely to indicate that mentoring was a likely implementation strategy than non-DEIS and Rural DEIS schools.

Primary schools also varied, mainly by enrolment size, but also by DEIS status, in terms of the areas that they planned to prioritise in their school's Digital Learning Plans. For example, developing class-specific or subject-specific approaches were significantly more likely to be prioritised among schools with smaller enrolment sizes than those with larger enrolments.

On the other hand, larger primary schools were significantly more likely to prioritise improving the sharing of documents and resources than smaller schools. Comparing priorities across DEIS and non-DEIS schools, DEIS Rural schools were significantly more likely than non-DEIS, Urban Band 1 and Urban Band 2 schools to prioritise the assessment of learning.

At post-primary level, respondents in DEIS schools reported that they were less likely to integrate their Digital Learning Plans with the school's overall Planning Processes than non-DEIS schools. This is likely to be related to the slightly different planning processes in place in DEIS and non-DEIS schools.

Post-primary schools varied somewhat in terms of their Digital Learning Plan priorities. For example, small schools were significantly more likely than medium or large schools to select enhancing the use of digital technologies in certain subject areas as one of their top five priorities. However, these differences were not substantial, and smaller than variations observed at primary level.

In terms of the likelihood of implementing different strategies to support DLF implementation, post-primary schools were more similar than different to one another in this regard. However, mentoring was rated as more likely in community/comprehensive and non-DEIS schools, while liaising or collaborating with other post-primary schools was rated as more likely among DEIS schools and schools with smaller enrolment sizes.

Embedding digital technologies in teaching, learning and assessment

At primary level, those most likely to rate their school's current level of practice as emerging or developing (as opposed to intermediate, advanced or highly advanced) were schools with smaller enrolment sizes, non-DEIS and Rural DEIS schools.

At post-primary level, secondary boys and secondary mixed schools were significantly more likely to indicate that they were emerging or developing with respect to embedding DTs than secondary girls, ETB, and community/comprehensive schools. ETB schools were significantly more likely to indicate that they were advanced or highly advanced compared to the other school types at post-primary level.

Digital technology infrastructure, connectivity, technical support and engagement

At primary level, DEIS Rural schools had a mean score on a digital technology infrastructure and connectivity scale that was substantially and significantly lower than that of non-DEIS, DEIS Urban Band 1 and Urban Band 2 schools, while Urban Band 2 schools had the highest mean score on this measure. Higher scores on this scale indicate a higher rating by schools for their levels of digital technology infrastructure and connectivity within the school. Similarly, schools with medium and large enrolment sizes had a mean digital technology infrastructure and connectivity score that was significantly higher than those in schools with very small and small enrolment sizes.

At post-primary level, ETB schools had a mean score on the digital technology infrastructure and connectivity scale that was significantly higher than the mean score in mixed secondary school types. This indicates that ETB staff rated their schools' digital technology and infrastructure as being significantly higher (better) than staff in mixed secondary schools. Post-primary schools did not vary by DEIS status or enrolment size on this measure.

Technical support

At primary level, Urban band 1 and Urban band 2 schools were more likely to indicate that technical support was delivered through a mixture of internal and external supports than

non-DEIS and Rural DEIS schools; non-DEIS and DEIS Rural schools more frequently relied on technical support that was provided externally; and 15% of DEIS Rural schools had no technical support (compared with 3-8% of other school types). Similarly, 15% of small schools (with enrolments of up to 65 pupils) had no technical support in place (compared with 2-10% of larger schools).

The perceived effectiveness of technical support at primary level was higher in DEIS Urban Band 1 and 2 schools and in schools with large enrolment sizes (251 pupils or more) than in non-DEIS and DEIS Rural schools, and schools with smaller enrolment sizes. These differences are statistically significant.

Asked whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support, this was most likely to be in place or in the process of being explored in DEIS Urban Band 1 schools relative to Urban Band 2, DEIS Rural and non-DEIS schools.

At post-primary level, there were no differences across schools by enrolment size, DEIS status or sector/gender composition in terms of how technical support was provided (internal, external, a mixture).

However, the perceived effectiveness of technical support varied significantly across post-primary schools, being highest among community/comprehensive schools, non-DEIS schools, and schools with large enrolments, relative to secondary schools, ETBs, DEIS schools and schools with smaller enrolments.

Also, capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support was significantly more likely to already be in place or being explored as a possibility among ETB schools relative to secondary and community/comprehensive schools.

E5 Seminar evaluation survey results

Participants' experience of the PDST Technology in Education seminars was extremely positive, with large majorities of attendees from primary, post-primary and special schools expressing positive views about seminar content, the practical approach taken, time given to planning, and the opportunity to network or collaborate with staff from other schools. Levels of satisfaction with the seminars were broadly similar at primary and post-primary levels, although post-primary level respondents were somewhat less happy with the prior notice and information about the seminar than primary level respondents.

Participants' self-rated levels of knowledge about the DLF, digital learning, constructivism, the six-step planning process, and monitoring and evaluating implementation were markedly higher after having attended the seminar in a large majority of respondents than they had been before attendance, and in particular, among respondents who had lower initial levels of familiarity.

Somewhat lower gains in level of reported familiarity with digital learning (in general) were found at both primary and post-primary level in comparison with the other four items. This

could suggest a perceived need among school staff to increase their knowledge of what digital learning looks like in specific teaching and learning contexts.

Respondents' reported levels of confidence with implementing the various steps involved in the DLF and their schools following seminar attendance was also high among a large majority. However, these data suggest a somewhat higher level of confidence among post-primary than primary teachers. Post-primary respondents were more likely than primary respondents to rate themselves as more confident in establishing a Digital Learning Team, the six-step planning process, and gathering and evaluating data.

Overall, the seminar evaluation survey findings strongly confirm that the preparatory work of the PDST Technology in Education team, the content of the seminars, and their design, were very well suited to the diverse needs of participants. The most common criticism expressed was the perception that more time was needed to go more thoroughly through the materials and have more opportunities to plan, network and examine case study examples and digitally-embedded teaching and learning in practice. A minority of seminars (and, it seems from participants' reports, slightly more at post-primary than primary) were negatively affected by technical issues, and a small number of participants commented negatively on seminar organisation.

E6 PDST Technology in Education Focus group findings

Seminar preparation and content

The work of the PDST Technology in Education team of Advisors can be characterised by a general culture of mentoring, collaboration and shared formal and informal learning, which persisted throughout the seminar phase and beyond. This collaborative culture was frequently cited by the PDST Technology in Education team members as being an important factor in the seminars' success.

Consistent with other seminar design/planning by the PDST, the seminar was designed by the design team in collaboration with other PDST Technology in Education team members and link Inspectors, and signed off on by the PDST Deputy Director for research design. After this, a 'critical friends' day was held, wherein advisors met with the inspectorate for feedback on the seminar design.

The seminar content was almost identical for primary and post-primary schools, and a high emphasis was placed on keeping the seminar content consistent throughout the country.

Seminar attendance

Schools were notified of the seminars mainly through their local education centres. However, many schools were apparently unaware that seminars were taking place. A number of schools reported finding out about the seminars by word of mouth.

Even when they had received notification about the seminars, some schools were not able to send any staff to them for a variety of reasons, including lack of substitute cover; long commuting times; some education centres providing too many dates for seminars, leading to undersubscription for many particular dates, and then to seminar cancellations; and difficulties in registering for seminars via some education centres' websites.

To address attendance issues, advisors suggested that the Department of Education and Skills rather than education centres should initially tell schools about the seminars; and that attendance at the seminars should be mentioned as a prerequisite for receiving DLF-related funding in Department Circulars. They also suggested that education centres could review and update their registration systems to be more user-friendly.

National rollout challenges

A key challenge noted by advisors was the prioritisation of the DLF among many other school initiatives which competed for staff time and attention. They also noted a perception among some school staff that the Digital Learning Team, and thus the DLF, was suitable only for people who had a technical mindset, was related to lack of buy-in in some cases. Advisors felt that continued support after the seminars could rectify this somewhat.

Basic problems with digital technology infrastructure hampered many schools' efforts to implement the DLF. Problems such as unreliable Wi-Fi and slow computers caused frustration and disillusionment even among staff who were committed to the DLF. The PDST advisors expressed some frustration and concern that there was no regionalised technical support for schools to solve these issues. Despite not being IT experts, PDST Technology in Education Advisors estimated that over half of the queries they got from schools were of a technical rather than a pedagogical nature.

Insufficient continued support to schools after the DLF seminar was mentioned by a number of advisors as an issue that could significantly hinder the successful rollout of the DLF. This support needed, in the Advisors' view, to be both technical and pedagogical, and they felt that these roles should be separate.

Links with school self-evaluation

The Advisors noted that schools have overwhelmingly chosen to focus on the Teaching and Learning dimension of the DLF, rather than the Leadership and Management dimension. This, they said, was because the former is the current focus of SSE. Advisors mentioned that in many cases, schools did not integrate their DLF and SSE processes. They identified a number of reasons for this:

- a large number of schools already had oral language as the focus of their SSE, meaning that they found it difficult to incorporate the DLF mid-cycle;
- the Inspectorate published a note to schools in December 2018 outlining how the DLF and SSE could be linked. Advisors felt that this was too late, as schools were already a few months into implementing their SSE plans by that stage;
- some schools decided to familiarise themselves with the DLF and digital learning plan first, before joining it with their SSE activities;
- some schools were unclear about how steps 1 and 2 of the 6-step planning process related to SSE; and
- DEIS schools had difficulty linking the DLF and SSE because along with these two plans, they also had to compile a DEIS plan.

E7 Implications

Opportunities for collaboration and shared learning

Given the high value placed on the opportunities to network and collaborate by DLF seminar attendees, it would be worth further exploring and developing ways for staff to collaborate and network with one another to share their experiences and learning as they implement the DLF, both in online and face-to-face settings. The plans of the PDST Technology in Education to support the DLF in its second year through online (blended) community of practices are welcomed.

Technical support

Consistent with the DLF Trial findings, technical support was identified by school staff and PDST advisers as a significant obstacle to DLF implementation in many schools. It is suggested that the work of the DES' Technical Support Working Group be supported and prioritised. Given the willingness of many schools to work with other neighbouring schools in establishing technical support solutions reported through the baseline survey, there is merit in exploring the clustered provision of technical support further, possibly by piloting technical support in clusters of schools. This could be considered against potential cost savings in the medium term.

Connectivity

Currently, all post-primary schools have access to broadband in excess of 100 Mbp/s symmetrical upload and download speeds. It is envisaged that up to 1,800 primary and special schools will have 30 Mb/s broadband connectivity by the end of 2020. A further 700 primary schools are located in the National Broadband Plan intervention area, with subsidised broadband provision planned for these schools. The remaining schools will need to rely on industry providing the required infrastructure. To support the implementation of the DLF in primary schools that do not have adequate or reliable Internet connectivity, it is suggested that tailored, offline tools and resources are needed. As the DLF evaluation continues, it will be of interest to monitor the rollout of the National Broadband Plan.

Communicating about and organising CPD

It is suggested to review and enhance the booking and communications processes between education centres and schools for CPD and other events. It is further suggested to identify and implement ways to increase system-level awareness of high-priority CPD initiatives and where applicable, any linkages with funding, for example through a DES Circular.

Understandings of 'embedding'

It is possible that the understanding of the concept of embedding digital technologies into teaching, learning and assessment varies across primary, post-primary and special schools, as well as across individual members of school staff. These differences could, in turn, give rise to variations in how schools view levels of effective and highly effective practice. The longitudinal surveys will ask school staff about their understanding of embedding to gain a better understanding of this issue.

Understanding variations in school's digital technology contexts

Further analysis into the variations in digital technology infrastructure, connectivity and technical support is suggested, and in particular, the extent to which these variations are related to progress in implementing the DLF over time.

Chapter 1: Background, aims and design of the Digital Learning Framework

This first (baseline) report on the DLF national evaluation follows from the reports on the evaluation of the Digital Learning Framework (DLF) Trial (Cosgrove et al., 2018a, b). The Trial was conducted in 20 post-primary and 28 primary and special schools in 2017-2018 and the findings inform the design and focus of the full national evaluation of the DLF which runs from 2018-2022.

The national evaluation involves, firstly, collecting baseline survey data from staff in all schools that attended PDST Technology in Education (TiE) DLF seminars between October 2018 and April 2019, and subsequently, tracking progress and change in representative sub-samples of primary, post-primary and special schools in late 2019, 2020 and 2021. The longitudinal component will include surveys of school staff as well as focus groups with school staff and students in a small subset of the longitudinal school samples.

This report documents the findings from the baseline phase, and includes ERC baseline survey data, findings from focus groups with PDST Technology in Education, and seminar attendees' responses to the PDST Technology in Education seminar evaluation survey. This baseline report will be used as a reference point for the subsequent longitudinal data collections.

Section 1.1 provides the context and rationale for the evaluation. The remainder of the chapter describes the objectives, aims, oversight and design of the DLF evaluation; discusses caveats for interpreting the results; and provides an overview of the remainder of the report.

1.1 Background

1.1.1 Digital Learning Framework and Digital Strategy for schools

The DLF is a resource to guide schools on how best to effectively use digital technologies to transform their teaching and learning practices. It supports the Digital Strategy for Schools 2015-2020 and other Department policies in a number of areas including curriculum reform and implementation, skills development, teacher education and improved learner outcomes. This section provides an overview of Ireland's national *Digital Strategy for Schools 2015-2020* and describes how the DLF is linked to that strategy as well as other national initiatives.

In September, 2017, the *Digital Learning Framework* (DLF) for primary and post-primary schools was published by the Department of Education and Skills (DES, 2017a, b). This was followed by *Digital Planning Guidelines* and a *Planning Template*, published in December 2017[1]. The DLF is a tool to help schools manage the transformation of teaching and learning as a result of embedding digital technologies into practice, and has been developed to

[1] http://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Framework-and-Planning-Resources-Primary/ and http://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Framework-and-Planning-Resources-Post-Primary/; video exemplars are also available.

enable schools to engage with and implement elements of Ireland's national *Digital Strategy for Schools 2015-2020* (DES, 2015a).

Grounded in constructivist principles, the Digital Strategy for Schools and the DLF promote embedding digital technologies into a wide range of teaching and learning activities. The *Digital Strategy* (2015a, p. 5) states that:

> "The Department's vision for ICT integration in Irish schools is to realise the potential of digital technologies to enhance teaching, learning and assessment so that Ireland's young people become engaged thinkers, active learners, knowledge constructors and global citizens to participate fully in society and the economy".

The notion of 'embedding' is core to the implementation of the DLF. The Framework (DES, 2017a, b, p. 15) defines embedding digital technology as 'Moving beyond ICT integration, where digital technology is seamlessly used in all aspects of teaching, learning and assessment to enhance the learning experiences of all students.'

The *Digital Strategy* is guided by findings from the *2013 ICT Census of Schools* (Cosgrove et al., 2014a, b) and builds on previous strategies, including *Investing Effectively in Information and Communications Technology in Schools, 2008-2013* (DES, 2008) and *Building Towards a Learning Society: A National Digital Strategy for Schools* (Butler et al., 2013).

The embedding of digital technologies into teaching, learning and assessment is associated with a range of challenges. For example, in the summary report on the 2013 ICT Census of Schools, Cosgrove et al. (2014a, p.8) note:

> "The linking of investments in ICT to improvements in student outcomes is a challenge faced by all countries investing in the use of ICT in education. The present review pointed to the complexity of developing a Digital Strategy for Schools. Such a strategy must consider infrastructural issues but also how digital technologies are to be used in curriculum and assessment. Teachers' pedagogical orientations are pivotal in how the digital technologies are used. Although digital technologies can make things possible, it is people that make change possible".

The report on the *2013 ICT Census of Schools* discusses a range of policy priorities, organised under four main themes:

- Theme 1: Teaching, learning and assessment using ICT
- Theme 2: Teacher professional learning
- Theme 3: Leadership, research and policy
- Theme 4: ICT infrastructure.

These four themes also underpin the *Digital Strategy,* which specifies a set of actions under each theme.

Of particular relevance to the DLF and the work of schools is Theme 1 (teaching, learning and assessment using ICT), under which the DES (2015a, p. 6) states:

> "The Strategy will adapt the UNESCO ICT Competency Framework for Teachers so that schools will have greater clarity around the concept of ICT integration. … [this] will allow the Department's support services and others to provide more appropriate support materials and services to principals and teachers on embedding ICT into their practice. This will be a central focus of the Strategy and it will be reviewed at various intervals and levels between 2015 and 2020".

The UNESCO framework referred to above (along with by other European and international frameworks) informs the DLF, and the involvement of the Professional Development Service for Teachers Technology in Education team is one example of the provision of supports to enable the embedding of the DLF into teaching and learning.

Under Theme 2 (teacher professional learning), the DES (p. 7) states that: "The Strategy will provide schools with guidance and examples of good practice on the effective, critical, and ethical use of ICT for teaching, learning and assessment. These examples will reflect real classroom practice in action". One way in which this element of the strategy is being realised is through the availability of exemplar videos on the PDST Technology In Education website[2], the www.DLplanning.ie website, and are also embedded in online and face-to-face courses.

Under Theme 3 (leadership, research and policy), the DES notes the need for distributed leadership across school managers and other stakeholders, and emphasises how the Strategy links with other practices: "…the Strategy will facilitate schools to create linkages with existing school policies, for example School Self Evaluation, so that ICT is embedded deeply within the school" (p. 7). To achieve this linkage, the structure of the DLF is aligned to the *Looking At Our School* framework (DES, 2016a, b), which is designed to underpin both school self-evaluation and school inspections (the structure of the DLF is described in the next section)

Under Theme 4 (ICT infrastructure), it may be noted that the Schools Broadband Access Programme provides for the supply of broadband connectivity in all primary and post-primary schools. Around 98% of schools are included in this Programme. All post-primary and some 58 special schools are on high-speed broadband connections of in excess of 100Mbp/s symmetrical upload and download speeds. Under the primary school programme, approximately 1,600 primary schools have download speeds of 30Mb/s or higher (generally accepted as the minimum speed for reliable Internet connection), which represents about 50% of all primary schools. It is envisaged that an additional 200 primary schools will be provided with improved broadband connectivity by the end of 2020. Also, about 700 primary schools are located in the National Broadband Plan intervention area[3].

Broadband capacity varies by geographical location and local infrastructure. On a fixed network, for example, factors affecting the speed and quality of Internet connectivity

[2] http://pdsttechnologyineducation.ie/en/Good-Practice/Videos/; http://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Framework-and-Planning-Resources-Primary/; http://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Framework-and-Planning-Resources-Post-Primary/

[3] The amber area on the map located at https://www.dccae.gov.ie/en-ie/communications/topics/Broadband/national-broadband-plan/high-speed-broadband-map/Pages/Interactive-Map.aspx

include the data transfer technology (with faster connections via fibre-optic and cable than via xDSL); distance between the device and the network centraliser (the further a school from the broadband operator's centraliser, the slower the connection); and the number of devices in a school attempting to connect to the Internet. The DES also acknowledges the increasing importance of cloud computing and commits to evaluating a number of technical support options to identify the best solutions for schools. Guidance for schools on these and other issues is available on the PDST Technology in Education website[4].

In addition, to help support the implementation of the *Digital Strategy*, a 210 million euro investment in ICT infrastructure grants for primary and post-primary schools in January 2017[5] was announced. To date, 110 million euro of this funding has issued to schools, including the most recent instalment of 50 million euro in early 2019. The 2019 Circular[6] indicates (p. 5) that the following types of infrastructure and equipment may be purchased with this grant. Of note is that technical support and maintenance are not explicitly covered in this list:

- Teaching computers (desktop PCs, tablets, laptops or hybrid devices)
- Shared student computers (desktop PCs, tablets, laptops or hybrid devices)
- Projectors (short throw or ultra-short throw, long throw, interactive, or interactive flat screens)
- Networking equipment (e.g. fixed and wireless networking, including cabling, switches and installation)
- Cloud based tools and applications to support learning
- Learning platforms (applications used to support the teaching and learning process)
- Local software or 'apps' to support learning
- Other ICT equipment, including relevant digital items to support teaching, learning and assessment (e.g. audio visual equipment and other equipment including mobile laptop/tablet trollies, printers and school server).

The DLF is firmly embedded in the Department's *Action Plan for Education* for 2019 (DES, 2019). Under Goal 1 (*We will shape a responsive education and training system that meets the needs and raises the aspirations of all learners*), implementation of the Digital Strategy for Schools 2015-2020 is listed as Action 10, the first sub-action of which is the commencement of the longitudinal study on the Digital Learning Framework and its implementation in schools. Under Goal 3 (*We will equip education and training providers with the skills and support to provide a quality learning experience*), links between the DLF and School Self-Evaluation and school inspections are evident. Under Action 31 of Goal 3, for example (management of a programme of SSE visits to primary and post-primary schools), Sub-Action 31.1 states that the DES will 'publish SSE updates for primary and post-primary schools in order to promote the embedding of SSE in schools and to support the implementation of strategies such as STEM, Modern Foreign Languages and Digital Learning'. Under Action 32 of Goal 3 (planned programme of inspection and advisory visits

[4] http://pdsttechnologyineducation.ie/en/Technology/

[5] See press release dated January 3, 2017, at www.education.ie; rates payable are €2,000 per school plus €22.20 per mainstream pupil in primary schools, with additional per capita payments for pupils in DEIS schools, Special Classes and Special Schools. At post-primary, the rates payable are €2,000 per school plus €31.90 per student, with an additional per capita payment for students in DEIS schools.

[6] https://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0018_2019.pdf

in schools and alternative education settings), Sub-Action 32.6 states that the DES will implement 'a thematic inspection report on Digital Learning in primary and post-primary schools and early years settings in order to provide both evaluative information and guidance on digital learning'.

The DLF links with and complements other recent and current DES activities, including planned changes to curricula and Certificate examinations. For example, a new mathematics curriculum at primary level (due for publication in Autumn 2021)[7] is planned to incorporate aspects of computational thinking. At post-primary level, Coding and Digital Media Literacy are two among the 10 courses available at Junior Cycle[8]; at Senior Cycle, Phase 1 of Computer Science was introduced as a new Leaving Certificate subject[9] in 40 schools in September 2018, with further roll-out planned for September 2020[10]. In addition to this, digital technologies are embedded in all new subject specifications, regardless of whether these subjects are explicitly computer-related.

The use of digital technologies as an integral part of teaching, learning and assessment is not a new policy area. It has been endorsed in a range of educational policies and initiatives over the past decade. For example, the *National Strategy to Improve Literacy and Numeracy among Children and Young People* (2011-2020), (DES, 2011a), the *Key Skills Framework* (NCCA, 2009), and the *Framework for the Junior Cycle* (DES, 2015b) all assert that digital technologies should be used as a part of pupil/student learning.

1.1.2 Structure and purpose of the Digital Learning Framework

The DLF is organised along two dimensions and eight domains:

- Teaching and Learning Dimension
    - Domain 1 Learner Outcomes
    - Domain 2 Learner Experiences
    - Domain 3 Teachers' Individual Practice
    - Domain 4 Teachers' Collective/Collaborative Practice
- Leadership and Management Dimension
    - Domain 1 Leading learning and teaching
    - Domain 2 Managing the organisation
    - Domain 3 Leading school development
    - Domain 4 Developing leadership capacity.

Within each of the eight domains of the DLF, there is a set of standards, accompanied by statements of *effective* and *highly effective* practice. Table 1.1 is an example from Domain 1, Learner Outcomes, of the DLF for primary schools[11].

[7] https://www.ncca.ie/en/primary/primary-developments/maths-curriculum
[8] https://www.curriculumonline.ie/Junior-cycle/Short-Courses
[9] https://www.curriculumonline.ie/Senior-cycle/Senior-Cycle-Subjects/Computer-Science/
[10] https://www.education.ie/en/Schools-Colleges/Information/Curriculum-and-Syllabus/Senior-Cycle-/leaving-certificate-computer-science-faq-s.pdf.
[11] The DLF is identical at primary and post-primary levels except for changes in wording to reflect pupils (primary) or students (post-primary).

Table 1.1. Teaching and Learning Domain 1: Learner Outcomes - example of standards and statements of effective and highly effective practice

Domain 1 of Teaching and Learning: Learner outcomes		
Standards	**Statements of effective practice**	**Statements of highly effective practice**
Pupils enjoy their learning, are motivated to learn, and expect to achieve as learners	Pupils use appropriate digital technologies to foster active engagement in attaining appropriate learning outcomes	Pupils use appropriate digital technologies to foster their active, creative and critical engagement in attaining challenging learning outcomes
	Pupils use digital technologies to collect evidence and record progress	Pupils use digital technologies to collect evidence, record progress, evaluate and reflect, and to create new solutions and/or products

Source: DES, 2017a, p. 5.

The Statements of Practice are underpinned by the UNESCO *ICT Competency Framework for Teachers* (UNESCO & Microsoft, 2011) and informed by the EU Joint Research Centre's *DigCompEdu*[12] and *DigCompOrg*[13] frameworks.

The DLF is designed to encourage both collaboration and self-reflection, as well as guide practice. In describing how schools might implement the DLF, the DES (2017a, pp. 2-3) comments:

> "It is not expected that all aspects of the new Framework will be included in any one self-reflective or evaluative activity. Rather, the Digital Learning Framework should be viewed as **an enabler of self-reflection and improvement** and not as an inflexible check-list. It is crucial from the outset that **the leadership team in each school has a shared understanding of why and how the school seeks to embed digital technologies** in teaching and learning and is committed to doing so". (Emphasis added.)

1.1.3 Digital Learning Framework Trial: Key findings

The results of the ERC evaluation of the DLF trial, which took place in 48 schools (Cosgrove et al., 2018a, b), are used to guide national roll-out of the DLF, which began in September 2018.

Successes

Overall, the DLF trial was considered a success from the perspectives of Digital Learning Team (DLT) leaders, teachers and PDST advisors. There was evidence of improvement in embedding digital technologies (DT) in teaching, learning and assessment in the course of the short six-month trial period. These improvements were evident in the statistically significant increases in PDST advisors' ratings of effective practice across Phases 1 and 2 of the Field Trial, in the descriptive information from the surveys, and in the qualitative information emerging from the focus group interviews with school staff and PDST advisors. The DLF document and related resources were also viewed positively. For example, participants were generally positive about the common structure of the DLF and the LAOS framework.

[12] https://ec.europa.eu/jrc/en/digcompedu
[13] https://ec.europa.eu/jrc/en/digcomporg

Seven themes or sets of issues emerged consistently across respondent groups (PDST advisors, DLT leaders, teachers) in the DLF Trial findings. Of these (summarised below), Themes 3, 4, 5 and 6 are examined in the current baseline report. The other themes contribute to the reporting and analysis plan of the longitudinal phases of the DLF national evaluation.

Theme 1: DLF document, Digital Learning Planning Guidelines (DLPG) and other DLF resources

School staff in the DLF Trial wanted access to information that would describe the DLF process from beginning to end. They also wanted assistance and support in unpacking the DLF domain(s) in their local contexts, more exemplars, and more guidance to schools that may be early in the process of embedding DT (i.e. beginning to work towards a level of effective practice), some of which may also be smaller schools. The www.DLplanning.ie website, developed by PDST Technology in Education following the DLF Trial, has taken these concerns and feedback into account in its content and design. Schools' use of and views on the DLplanning website will be explored during the longitudinal phase of the national evaluation.

Theme 2: Time

Lack of time to understand, reflect on, and implement the DLF, particularly using a whole-school approach, was cited as a frequent challenge. The theme of time will be explored in the longitudinal phase of the national evaluation.

Theme 3: PDST support and professional learning/training

There was strong consensus across respondent groups that the PDST support was essential to the successful implementation of the DLF trial. On average, PDST advisors spent a little over 30 hours working with each school assigned to them over the six-month DLF trial period. Clearly, this is not sustainable for national roll-out. Therefore, the translation of DLF Trial supports to wider national roll-out is an area of focus in this baseline report (as well as subsequently in the longitudinal phases).

Theme 4: Technical support

The DLF Trial findings suggested that further work is needed to identify cost-effective, efficient models and solutions to providing equitable technical support to schools. Technical support had previously been identified as a key challenge in the 2013 ICT Census of Schools (Cosgrove et al., 2014a, b). In response to this, the Digital Strategy provides for a review of Technical Support provision in schools.

School staff and PDST advisors in the DLF trial were of the view that technical support should be provided by technicians, leaving schools' DLT leaders freer to focus on the strategic and pedagogical elements of DT, in order to enable schools to develop a culture in which teachers can more effectively embed DT in teaching, learning and assessment.

The DES has established an Expert Group to deliver on the key Digital Strategy objective of technical support solutions. The Expert Group (Technical Support Solutions for Schools) will identify and evaluate technical support options in consultation with the relevant stakeholders, including management bodies, in order to develop a model of technical

support that will meet the varying needs in the system. It is envisaged that the outcome of this work will provide recommendations for the implementation of technical supports to meet the needs of schools.

Given the significant technical support/maintenance challenges experienced by some schools in the DLF Trial, this baseline report includes an examination of the nature and needs of DLF national evaluation schools with respect to technical support.

Theme 5: Infrastructure

The DLF Trial reports noted considerable variation in schools DT infrastructure and suggested that schools that are very early in the process of embedding DT into teaching, learning and assessment may benefit from specific and practical guidance relating to DT infrastructure (devices and/or connectivity). The theme of infrastructural variation is further examined in this baseline report.

Theme 6: Measuring and evaluating progress

In order to understand whether or not the DLF has achieved its aims, clear and valid measurable indicators of levels of effective and highly effective practice are needed. Without a shared understanding of effective and highly effective practice and a means to reliably measure levels of practice, monitoring the implementation of the DLF would be problematic. Results from the DLF Trial indicated that PDST advisors and schools may be using somewhat different criteria to assess levels of practice in DT. Data collected from the baseline phase of the national evaluation, as well as the longitudinal phases, will be used to construct and validate a schools DT index. Our aim is to establish an initial measure at baseline, against which to compare progress and validate the measurement of effective/highly effective practice as the DLF national evaluation progresses through its longitudinal phases.

Theme 7: Students' and pupils' views on DT

The DLF Field Trial evaluation reports recommended that, as the rollout of the DLF progresses, further information on the views of learners should be gathered. Some relevant data from learners will be available from PISA 2018 (15-year-olds' attitudes to, interest in, and confidence with DT, with international comparisons) and from NAMER 2020 (second and sixth class pupils' home and school digital environments and usage of DT), and data from these two sources will be incorporated into the reporting on the longitudinal phases of the DLF national evaluation. It is also planned to conduct focus groups with students in a small sub-set of schools during the longitudinal phase of the national evaluation.

1.1.4 Tools and resources for schools

As noted in the previous section, following the DLF Field Trial, the PDST Technology in Education developed an integrated suite of resources at www.DLplanning.ie. It contains resources for teachers and Digital Learning Team (DLT) leaders such as exemplar videos, surveys for self-assessment, student surveys, and DLF planning documentation. The website is available in both English and Irish. This section offers a short descriptive summary of the DLplanning website.

The site's home page contains a brief description of the purpose of the DLF and an overview of the resources and supports available to schools on the website. There are also links provided to external resources such as courses provided by the PDST and by local bodies in education centres around the country. These courses typically run for one week, and they aim to address gaps in teachers' knowledge about how to successfully integrate DTs into their practice. Course content includes information on useful websites and applications, information on internet security and cyberbullying, and training in the use of tablets to improve student numeracy and literacy.

The home page also contains downloadable documents which outline the DLF, as well as a template of a plan for Digital Learning and a SCOT (Strengths, Concerns, Opportunities and Threats) analysis template for self-assessment. There is an infographic guide to the 6-step Digital Learning Planning Cycle on the home page. Each step is briefly outlined, and the infographic reflects the cyclical nature of the planning process. Videos outlining the DLF are provided on the home page as well, with content ranging from the underlying educational philosophy of constructivism, to practical examples of the DLF being implemented in schools across the country.

From the home page, schools can indicate whether they are primary or post-primary. When they do so, they are brought to a page where they select the dimension of the DLF they have chosen to focus on – Teaching and Learning, or Leadership and Management. Once a dimension is selected, a list is displayed of statements of effective and highly effective practice for each domain within that dimension. As in the DLF, these standards and statements are aligned with the LAOS (Looking At Our School) framework, ensuring consistency between the DLF and the school self-evaluation and external inspection activities. These statements are accompanied by PDST-produced exemplar videos of the relevant level of practice with regard to teaching, learning, and assessment in each domain.

Alongside these videos and statements, online and downloadable teacher surveys are provided, which allow teachers and DLT members to assess the extent to which their current practice reflects effective and highly effective practice. This feeds into the second and third steps of the 6-step plan – *gathering evidence* and *analysing and making judgements*. Other downloadable documents include student questionnaires, which assess the extent to which the school's implementation of the DLF has reached its students, and focus group topic guides for staff meetings, which facilitate effective discussion of DT implementation. The broad purpose of these resources is to enhance self-assessment of current practice and to guide schools' implementation of effective and highly effective practice in digital technologies (DT).

The website also contains a 'Contact' page, from where schools can send an email to the PDST. This page contains a text box for such messages, as well as the phone, fax, and email details of the PDST.

The content and design of the DLplanning website have taken feedback and concerns expressed by schools during the DLF Field Trial into account. For example, many more exemplar videos are now available compared to previously, and the structured presentation

of the six-step process with concrete tools and examples facilitates schools' breaking down of the DLF implementation into discrete, manageable tasks.

Online safety is another important aspect of digital technologies within the overall context of the DLF. In addition to the resources and supports available through the DLplanning website, www.webwise.ie, an Internet safety initiative managed by the PDST, promotes awareness of online safety issues and good practice among students, their parents and teachers. Webwise promotes the autonomous, effective and safe use of the Internet by young people through a sustained information and awareness strategy targeting school leaders, parents and children themselves, using consistent and relevant messages.

1.1.5 International context

This section provides a very brief overview of four relevant aspects of digital technologies in an international comparative context: usage of digital technologies (DT) in educational contexts; digital technologies infrastructure in schools; issues in the measurement of digital technologies usage; and relationships between usage and learning outcomes. Note that some of the international comparative data were collected prior to the implementation of the *Digital Strategy* in 2016. The international comparative context will serve as a useful backdrop during the longitudinal phase of the DLF evaluation.

Data from international comparative assessments consistently show that, relative to other countries, Ireland has low DT *usage* in schools, while broad measures of school DT *infrastructure* tend to be slightly better in Ireland than international averages. This underlines both the timeliness and importance of the DLF.

For example, data from the 2012 Programme for International Student Assessment (PISA), which focuses on the achievements and experiences of 15-year-olds, indicate that Ireland has the fourth lowest score of 29 OECD countries on an index measuring ICT usage at school (OECD, 2015). Also, close to half (46%) of Irish 15-year-olds reported that they did not use the Internet at school during a typical school day, which is the 6th lowest among 29 OECD countries. Ireland had the second lowest score on an index measuring use of computers during mathematics instruction, and the third lowest rate of using computers for homework, out of the 29 countries.

In contrast to these usage indices, PISA 2012 results indicated that Ireland had a slightly higher than average share of schools with Internet access (96% compared with an OECD average of 92%), and better than average student-device ratio at school (3.8 compared with an OECD average of about 4.8) (OECD, 2015). This suggests that basic digital technology infrastructure is not a main barrier in digital technology usage in post-primary schools in Ireland.

Secondary analysis of the PISA 2015 results (Shiel et al., 2016; McAteer, McKeown & O'Keeffe, in preparation) indicates that the score for Ireland on an index of availability of ICT in school was similar to the OECD average. In contrast, the mean score on an index of ICT usage in school was significantly lower in Ireland (-0.38, about two-fifths of a standard deviation) than the OECD average on this index (0.00). Irish students' use of ICT outside of school for schoolwork was also significantly lower than the corresponding OECD average

(with a difference again in the region of two-fifths of a standard deviation, i.e. -0.42 compared to 0.00). In contrast to the relatively low usage of ICT in school and out of school for homework, students in Ireland reported significantly higher interest in ICT, perceived ICT autonomy, and perceived ICT competence than the OECD averages on these indices. This pattern of results could suggest Irish students' opportunities to use DT in school settings or for learning purposes outside of school are lower than would be indicated by their high general interest in and confidence with DT.

Data from the most recent cycle of PISA (2018; McKeown et al., 2019) are consistent with 2012 and 2015 in terms of usage, even though 2012 and 2015 pre-dated the implementation of the *Digital Strategy.* Class usage by students in 2018 was again comparatively low. For example, 67% of students in Ireland, compared with 52% on average across the OECD, never used a computer in English class. In contrast, usage in class time by teachers was relatively high in Ireland. For example, 52.6% of students in Ireland (compared with 24.6% across the OECD on average) reported that in the past month, only the teacher had used a computer during English class time.

PISA 2018 indicators of infrastructure for Ireland contrast with relatively low student usage patterns. For example, McKeown et al. (2019) reported that 76% of principals in Ireland (compared to an OECD average of 67.5%) reported that the school's Internet or bandwidth was sufficient; and 73% of principals in Ireland (compared to an OECD average of 68.5%) agreed that digital devices in the school were of a sufficiently powerful computing capacity. On the other hand, only 21% of principals in Ireland compared with 54% across the OECD agreed that the school has sufficient qualified technical support staff.

At primary level, comparative information is available from the Trends in International Mathematics and Science Study (TIMSS 2015) and the Progress in International Reading Literacy Study (PIRLS 2016), both of which focus on Fourth Class at primary level. Like PISA 2012 and 2015, these data collections preceded the implementation of the *Digital Strategy.* More up-to-date international comparative data will be available from TIMSS 2019 in December 2020.

The reports of the teachers of children in Fourth Class who took part in TIMSS 2015 indicate that 40% of pupils in Ireland had some access to devices during mathematics lessons. This is similar to the international average of 37%, but much lower than other countries such as New Zealand, the Netherlands, Denmark and Northern Ireland (where computer access rates all exceeded 70%) (Mullis et al., 2016; Clerkin et al., 2017). Between 27% and 34% of teachers in Ireland reported that pupils used computers at least monthly for specific mathematical tasks (explore concepts, practice skills and procedures, and look up ideas and information). These again are similar to the international averages but much lower than the four countries with high rates of computer access, where percentages ranged between 48% and 86%.

Results from PIRLS 2016 are consistent with those of TIMSS 2015. In Ireland, teachers reported that 39% of their Fourth Class pupils had access to devices during reading lessons (Mullis et al., 2017). This is slightly lower than the international average of 43% and

considerably lower in countries such as New Zealand, Denmark, the Netherlands, Sweden and Northern Ireland, where access rates exceeded 75%.

Based on PIRLS 2016 data, Ireland has relatively favourable pupil-computer ratios. On average internationally (with Irish percentages in brackets), 51% (57%) of pupils were in schools that had 1 computer for 1 to 2 pupils, 23% (19%) in schools with 1 computer for 3 to 5 students, 19% (24%) in schools with 1 computer for 6 or more students, and 7% (0%) in schools with no computers available for instruction (Mullis et al., 2017).

It is important to note that many of these international comparisons are based on broad indicators of rates of connectivity and numbers of devices. Our view is that a range of more specific indicators is needed to better understand DT in schools, particularly when existing research paints a mixed picture of the relationship between digital technologies and student learning outcomes.

A review of the literature in this area by Rodrigues and Biagi (2017), for example, which included an examination of four meta-analyses, concluded that learning supported by digital technologies may be as effective as that without technology. However, the rather mixed body of evidence is likely to be due to variations in the purposes of the digital technology use, levels of use, characteristics of student and teachers using the technology, and/or other factors surrounding the use of technology, such as teacher effectiveness/competence in using digital technologies appropriately for teaching and learning, overall pedagogical approach, or subject domain, rather than the technology or its use *per se.* Other sources have examined the influence of moderating variables. For example, one key finding, from Archer et al. (2014), is that the nature and extent of training and support associated with the digital learning activities moderates the relationship between those activities and the learning outcomes.

Chaia et al. (2017) sum up this complex area of research well in commenting that 'Screens are not the problem when it comes to student outcomes – but neither are they the answer' (p. 9). Their findings, based on analyses of PISA 2015 data, indicate that there appears to be a declining impact of Internet use and PISA test scores when daily Internet use exceeds four hours (consistent with observations by McKeown et al. in the case of Ireland for PISA 2018), and that the impact of digital technology usage during school time on PISA scores is 'much more mixed' (p. 9). Chaia et al. (2017) suggest that effective deployment by teachers (rather than students) works best in terms of student learning outcomes. They recommend that '[education] systems should ensure that ICT programs are fully integrated with curriculum and instruction, and are supported by teacher professional development and coaching.' This recommendation is very much in line with the objectives and approaches underpinning the DLF.

Other findings from national studies such as the 2013 ICT Census and the DLF Trial demonstrate that the embedding of DT in teaching, learning and assessment is complex and not solely (and sometimes not at all) due to numbers of devices and rates of connectivity. A range of other factors appear to hold particular relevance (in line with observations by Chaia et al., 2017), in particular, technical support and maintenance, teacher confidence, school leadership, and a shared understanding and approach to using DT to support and enhance

teaching, learning and assessment. Looking ahead, the longitudinal phases of the DLF national evaluation aim to provide a more nuanced understanding of the enablers of (and challenges in) successful implementation of the DLF through the focused measurement of a broader range of characteristics.

1.2 Objective and aims of the Digital Learning Framework evaluation

Based on Terms of Reference agreed between the ERC and DES, the objective of the DLF evaluation is to *evaluate the implementation of the Digital Learning Framework from the multiple perspectives of school principals, Digital Learning Team leaders, teachers and learners over a three-year period*.

There are 11 specific aims[14]:

1. Identify any changes to teaching, learning and assessment practices in participating schools that may be linked to implementing the DLF.
2. Determine if teachers have become more favourably disposed to the use of digital technologies in their practice as a result of implementing the DLF.
3. Elicit the views of participating teachers on if, and how, the DLF and related resources have impacted or influenced their practice, for example with regard to promoting a constructivist pedagogical approach and enabling self-reflection.
4. Capture the views of learners on the use of digital technologies in classrooms.
5. Determine learners' attitudes to and usage of digital technologies for learning using data collected in large-scale national and international assessments (e.g. PISA 2018, DLF evaluation data collections).
6. Determine the extent to which the DLF and related resources support individual teachers, collaborative and whole school planning in relation to the embedding of digital technologies into teaching, learning and assessment.
7. Describe principals' and DLT leaders' views on the extent to which the DLF and related resources support the SSE process in relation to the embedding of digital technologies in teaching, learning and assessment.
8. Assess the effectiveness, adequacy and appropriateness of professional learning supports provided to facilitate the implementation of the DLF and identify areas for development/enhancement.
9. Determine if and how the DLF and related resources have impacted on, and provided indicators for, identifying the continuing professional development requirements of the teachers and leaders in the participating schools.
10. Identify strengths and weakness of the DLF and related resources and make suggestions for improvement and, at the final phase of the study, recommendations for policy and practice.
11. Assess the efficiency of the approach taken by schools in implementing the DLF and, where appropriate, the efficiency of the linkage with the schools' SSE process.

[14] This baseline report provides initial information and hence does not address all 11 aims. Rather, it addresses aims 6, 7, 8 and 10. The subsequent longitudinal data collections (Q4 of 2019, 2020 and 2021), when compared back to the baseline survey findings, will inform all aims of the study.

1.3 Oversight of the DLF evaluation

The evaluation of the DLF is overseen by an advisory committee group of representatives from the DES' ICT Policy Unit, the Inspectorate, the PDST and the ERC. The advisory group provides guidance and advice on all key stages of the DLF evaluation, and in particular the content of the surveys and published reports.

The DLF advisory group consists of:

- Chris Kelly, DES Teacher Education Policy (Digital) Unit
- Anthony Kilcoyne, PDST Technology in Education
- Séamus Knox, DES Inspectorate
- Betty Regan, DES Teacher Education Policy (Digital) Unit
- Tony Shine, DES Teacher Education Policy (Digital) Unit
- Anne Sinclair, DES Teacher Education Policy (Digital) Unit
- Tony Weir, DES Inspectorate
- Jude Cosgrove, ERC
- Emmet Feerick, ERC.

In terms of implementation, the ERC's role is to design and administer survey instruments, analyse and report on these surveys, and design and report on focus groups with the PDST Technology in Education team, school staff and students.

The PDST Technology in Education's role is to design and deliver a suite of professional development supports to enable schools to implement the DLF.

1.4 Design of the DLF evaluation: ERC baseline survey and respondents

1.4.1 Design and content of the ERC baseline survey questionnaire

An online baseline questionnaire was developed by the ERC, and reviewed and approved by the DLF advisory group (see Section 1.3). The survey was delivered on SurveyHero™. The collection of individually identifiable data was avoided (e.g. IP addresses and other individually identifying information were not collected).

Participants in the PDST Technology in Education seminars were invited to complete the survey during the seminar. Table 1.2 summarises the content of the baseline survey. A copy of the survey in PDF format (English and Irish versions) is available at www.erc.ie/programme-of-work/dlf/.

Table 1.2. Content of the DLF evaluation questionnaire: Baseline phase

General information (roll number, school name, number of people completing questionnaire, roles in school)
School established a Digital Learning Team (DLT) (Y/N)
Dimension of DLF that school plans to focus on (Teaching and Learning/Leadership and Management)
Current level of practice in embedding digital technologies (DT) in teaching, learning and assessment (emerging – highly advanced)
Uniformity of teachers' embedding of DT in teaching, learning and assessment (quite uniform – a lot of variation)
Ratings of various aspects of DTs as they relate to needs and priorities of school (infrastructure, connectivity, technical support, teacher and student knowledge/skills) (excellent – poor)
Has school commenced development of Digital Learning Plan (DLP) (no, not commenced – yes, completed)
Extent to which DLP features in schools overall planning processes for 2018-2019 (to a large extent – to a small extent/not at all)
Likelihood of school availing of various strategies to promote implementation of DLF (definitely yes – definitely no)
Ranking of up to five of a list of priorities for school's DLP
Availability and model of technical support in school
Perceived effectiveness of technical support (highly effective – not effective)
Annual cost of technical support
Capacity / opportunity to collaborate with other schools regarding technical support (yes, already do this – no, this is unlikely)

1.4.2 Respondents

ERC baseline survey

In all, 1,524 responses were received from primary schools, 320 from post-primary schools, and 64 from special schools. Respondents completed the ERC survey during the PDST Technology in Education seminars, as noted earlier, and they were instructed to fill in one response per school since, in many cases, two (and occasionally, three) members of school staff attended the seminar.

At primary level, 65% of questionnaires were completed by two people while at post-primary level, 47% were completed by two people, and 56% of special schools questionnaires were completed by two people. Chapter 2 (Section 2.1) provides more detail on the respondents.

In order to be able to generalise the responses of survey participants to the population, sampling weights were computed, drawing on data that are available for all schools in the population.

- At primary level, weights were computed on the basis of the percentages of schools represented in each of 47 category combinations (DEIS status, enrolment size category, urban-rural classification, and percent of female enrolment).
- At post-primary level, weights were computed on the basis of 27 category combinations (enrolment size category, DEIS status, and school sector/gender composition).
- Mainly due to the lower number of special schools in the sample and the population, weights were computed on the basis of four enrolment size categories only.

The weight consists of the proportion of schools in the population in each category combination divided by that proportion in the sample.

> *For example: there are five non-DEIS, small enrolment, mixed sex secondary schools in the sample, and 10 such schools in the population. The weight for these five schools is (10/5) = 2, i.e. each such school represents two similar schools in the population.*

For analysis purposes the weights were standardised (divided by the mean of the weights) so that the N would not be artificially inflated, thereby increasing the risk of a Type I error (inferring that a difference is statistically significant when, in fact, the difference is not significant).

All analyses of the ERC survey baseline data are weighted using these weights and so are generalisable to the entire populations of primary, post-primary and special schools, at least on the basis of the characteristics used in the computation of the sampling weights.

PDST Technology in Education seminar evaluation survey

As with other seminars, the PDST Technology in Education collected feedback from participants following the DLF seminars. Normal practice for PDST seminar evaluation is not to collect roll numbers or any other identifying information from respondents. In all, 3,218 responses to the PDST Technology in Education seminar survey were received (2,720 primary and special schools, and 498 post-primary schools). It is not possible to match these results with the ERC baseline survey data (i.e. using school roll number), and more than one response per school would have been received in 50% or more of cases. Results, which include both numeric responses and text commentary, are described in Chapter 4. The results provide insights into how participants viewed the PDST Technology in Education seminars, and these act as a useful prior context for interpreting the ERC baseline survey results in Chapters 2 and 3.

Focus groups with PDST Technology in Education

Two researchers from the ERC conducted focus groups with PDST advisors in May and June of 2019. Four PDST Technology in Education advisors attended the focus group in May while five attended in June. Chapter 4 describes the themes emerging from these focus group discussions.

1.5 Guidelines for interpreting the results

In general, the quality of the data from the ERC baseline survey and the PDST Technology in Education seminar survey is very good. Where the rate of missing data for questions exceeds 5%, this is noted in the relevant tables and figures. Rates of missingness in excess of 10% should be interpreted with caution.

Some features of the study impose limitations and caveats for interpretation. First, we were unable to match the responses on the ERC baseline survey and PDST Technology in Education seminar survey because in line with common practice for anonymous seminar feedback, the latter did not collect school roll number. Furthermore, while the ERC survey provides population estimates with one response per school, the PDST Technology in

Education seminar survey data is unweighted, and in many cases, two respondents per school would have completed the survey. Therefore, while both surveys are valid in their own right, their points of reference are slightly different. The ERC survey takes the populations of primary, post-primary and special schools as its reference points, while the PDST Technology in Education survey takes the attendees of the DLF seminars as its reference point.

Second, while the ERC survey is weighted (as described in Section 1.4), the weights only account for structural and demographic characteristics such as DEIS status and enrolment size. As with any survey weights, they do not account for unmeasured differences between schools which participated in and did not participate in the DLF seminars. Schools which did not participate in the seminars may differ significantly from schools which did, along features or characteristics that are relevant to digital technology teaching and learning environments, but we cannot assess this because we do not have this information for the population of schools.

Third, as noted in Section 1.4, this report uses both numeric and qualitative information. The numeric data are derived from survey responses, while qualitative information is available through the focus group interviews with the PDST Technology in Education advisors and the commentaries provided by the seminar attendees in the PDST Technology in Education seminar survey. The qualitative data has been subject to thematic analysis to provide a concise description of key themes emerging. It is possible that another research team might identify and prioritise somewhat different sets of themes. That is, we recognise that it is not possible to have a fully impartial analysis of qualitative data of this nature.

Fourth, some of the analyses include comparisons across primary, post-primary and special schools. These are intended to be interpreted in a broad way. The sectors have important structural differences (e.g. regarding curriculum, assessment, timetabling, and management) and these should be borne in mind when interpreting these comparisons.

Fifth, this baseline report does not include students' perspectives. During the longitudinal phases, however, students' viewpoints will be included, both through focus groups and through secondary analyses of data from PISA 2018 and NAMER 2020.

Finally, it is emphasised that this is a baseline analysis. The inferences that can be drawn from the data are limited to a point in time. As the longitudinal phase progresses however, it will be possible to identify and describe patterns of change over time.

1.6 Content of this report

Chapter 2 describes the findings from the ERC's baseline survey, with separate reporting for primary, post-primary and special schools. Data are weighted (as described in Section 1.5) to provide population estimates of responses. Chapter 2 also includes a commentary on broad similarities and differences between primary, post-primary and special schools.

Chapter 3 further explores the ERC's baseline survey results by comparing sub-groups of schools, to identify differences by characteristics such as DEIS status and enrolment size.

Chapter 4 shares insights from the PDST Technology in Education from two perspectives. In the first section, the findings from the PDST Technology in Education's seminar evaluation questionnaire are described. This section summarises both the numeric responses and the commentaries provided by the school staff who attended the seminars. The second section describes the key themes that emerged from two focus group sessions held by the ERC with the PDST Technology in Education primary and post-primary teams, conducted in May and June 2019.

Chapter 5 considers the findings of Chapters 2, 3 and 4 in the context of the DLF Trial reports (Cosgrove et al., 2018a, b), identifies key conclusions, and offers suggestions to guide the continued implementation of the DLF.

Chapter 2: Key findings from the DLF-ERC baseline questionnaire

This chapter describes the findings from the DLF-ERC baseline questionnaire. The results are presented in five sections:

- Description of respondents
- Key findings from primary schools
- Key findings from special schools
- Key findings from post-primary schools
- Similarities and differences across primary, special and post-primary schools.

Results are weighted (see Chapter 1, Section 1.4) in order to be generalisable to the population of primary, special and post-primary schools in the country[15].

2.1 Description of respondents

Questionnaires were completed by respondents during the PDST Technology in Education DLF seminars. In the vast majority of cases, questionnaires were completed by either one or two representatives from the school. At primary level, 65% of the questionnaires were completed by two people and 35% were completed by one person. At post-primary level, 47% were completed by two people, 51% were completed by one person, and a further 2.5% were completed by three people. With respect to special schools, over half of the questionnaires (56%) were completed by two people, with 44% being completed by one person[16].

At primary level, about 70% of respondents were principals, 37% were class teachers, 28% were deputy principals, 18% were special education teachers, and 15% were assistant principals (see Table 2.1). At post-primary level, subject teachers comprised the most frequent respondent group (50.5%), with 25-35% of respondents falling into the categories of principal, deputy principal or assistant principal. In special schools, respondents were most commonly principals (50%) or class teachers (42%).

Table 2.1. Respondents' roles in the school

	Primary (n=1524)	**Post-primary** (n=320)	**Special** (n=64)
Principal	69.5	34.9	49.9
Deputy principal	27.6	25.3	29.0
Assistant principal	14.9	29.0	16.7
Class or subject teacher	37.3	50.5	42.4
Special education teacher	17.6	0.9	11.5

Note. Responses sum to more than 100%, as more than one respondent completed the questionnaire in most schools.

[15] The sample is generalisable to the general population of schools on the basis of the characteristics that are in the weights - enrolment size, DEIS status, sector, and gender composition. However, the sample may not be representative on other relevant characteristics such as overall quality of digital technology infrastructure.

[16] As noted in Chapter 1, Section 1.4, the number of ERC baseline survey respondents is not the same the PSDST TiE seminar evaluation survey described in Chapter 4 due to the fact that the latter was completed per participant, while the ERC baseline survey was completed per school.

2.2 Key findings from primary schools

The key findings for primary schools from the ERC baseline survey questionnaire are described in this section under four sub-headings (Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; Views on infrastructure, connectivity and teacher and pupil engagement with DT; and Technical support).

2.2.1 Implementing the DLF

Respondents were asked to indicate whether they were taking the lead in implementing the DLF in their school. Four-fifths of those who responded to the questionnaire (80%) indicated that they were taking the lead in implementing the DLF in their school.

Respondents were further asked to indicate whether their school had established a Digital Learning Team (DLT). The majority of primary school respondents (68%) indicated that they had not yet established a DLT, while a DLT had been established in 32% of schools. This finding may reflect the fact that there is a large number of small primary schools in the country. However, this finding is also unsurprising at baseline level given that schools are just starting out on implementing the DLF.

Respondents were also asked to indicate which of the two DLF dimensions, *Teaching and Learning*, or *Leadership and Management,* the school planned to focus on in implementing the DLF in their schools. The majority of respondents (71%) indicated that they would focus on a domain in the *Teaching and Learning* dimension (one of: learner outcomes, learner experiences, teachers' individual practice, teachers' collective/collaborative practice). The *Leadership and Management* dimension (one of: leading teaching and learning, managing the organisation, leading school development, developing leadership capacity) was chosen by only 4% of primary school respondents indicating that they would choose a domain from this dimension. Notably, 25% indicated that they were unsure as to which dimension of the DLF their school would focus on.

Furthermore, respondents were asked to indicate whether their school had commenced the development of a Digital Learning Plan (DLP) informed by the DLF[17]. Generally, primary schools had either not yet commenced development of a plan (64%), or were in the early stages of development (31%). Markedly smaller percentages indicated that they were in the latter stages of development (2.5%) or that the plan was completed (2.2%).

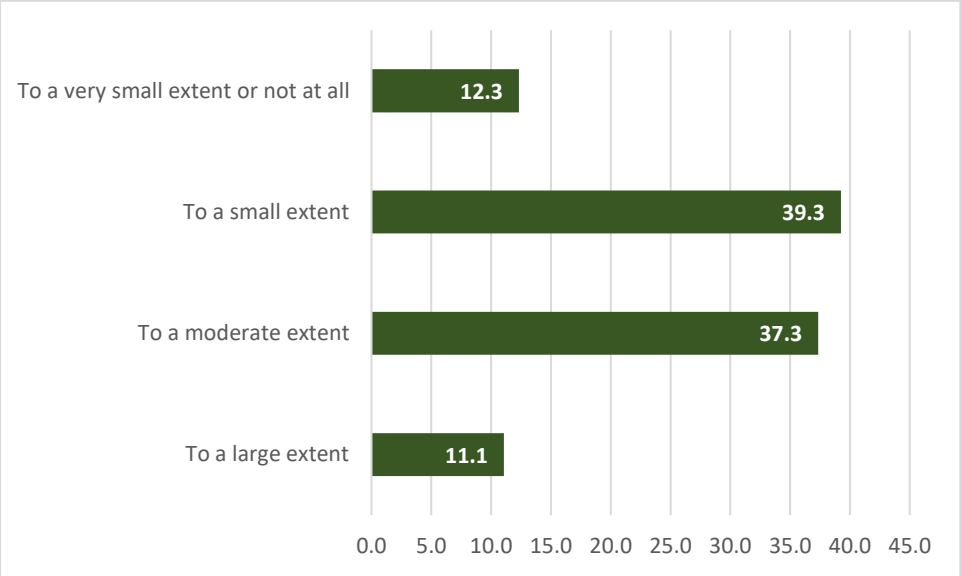
The extent to which the Digital Learning Plan does or will feature in the school's overall School Planning Process over the 2018-2019 school year was also of interest (see Figure 2.1). The majority of respondents indicated that the DLP would feature either to a small extent (39%) or to a moderate extent (37%) in the school's overall School Planning Process[18]. Approximately 12% of respondents indicated that the plan would feature to a

[17]The Digital Learning Plan, informed by the DLF, is the current requirement. Schools would have been involved in eLearning plans under prior policy.

[18] It may be noted that, as a result of industrial relations (IR) issues, primary schools had been directed (since around April 2016) not to engage in the 6-step SSE (School Self-Evaluation) process. The IR issues have since been resolved. There was no IR issue at any stage that prevented schools from becoming familiar with the *Looking at Our School* framework *(*LAOS) (Department of Education and Skills, Personal Communication, March 22, 2018). Nonetheless, primary school staff may have been less familiar with this framework than post-primary staff.

very small extent or not at all. At the other end of the scale, approximately 11% of respondents indicated that the plan would feature to a large extent.

Figure 2.1. Respondents' ratings (percentages) of the extent to which the Digital Learning Plan does or will feature in the school's overall School Planning Process over the 2018-2019 school year: primary schools (n=1521)



Respondents were asked to select five from a list of 14 categories in terms of their schools' DLP priorities. Results of this item are displayed in Table 2.2. Shaded areas represent the top five priorities across primary schools.

Table 2.2. Schools' priorities for implementing their Digital Learning Plan, primary schools (n=1517)

Priority/Item	**%**
Developing a whole-school approach	80.5
Developing teachers' skills in using specific apps or software	68.7
Furthering the use of digital technologies to support learners with SEN	41.3
Using digital technologies to improve learning outcomes	36.7
Using digital technologies to promote learners' interest and engagement	36.0
Enhancing the use of digital technologies in certain subject areas	34.7
Making improvements to digital technology infrastructure	34.7
Developing a class/year level specific approach(s)	32.5
Enhancing the use of digital technologies for assessment **of** learning	30.3
Making improvements to the sharing of documents or resources	29.5
Enhancing the use of digital technologies for assessment **for** learning	28.7
Making improvements to the quality or speed of (broadband) connectivity	15.8
Enhancing use of digital technologies for management and administration	13.4
Making improvements to technical maintenance and support	11.5

In line with the DLF's focus on teaching, learning and whole-school planning processes, the top two rated priorities, developing a whole-school approach (indicated by 80.5% of respondents) and developing teachers' skills in using specific apps or software (69%), were

chosen by the majority of respondents. Other items in the top five priorities were: furthering the use of digital technologies to support learners with SEN (41%), using digital technologies to improve learning outcomes (37%), and using digital technologies to promote learners' interest and engagement (36%).

Areas given a lower priority were: making improvements to technical maintenance and support (11.5%), enhancing the use of digital technologies for management and administration (13%) and making improvements to the quality or speed of (broadband) connectivity (16%).

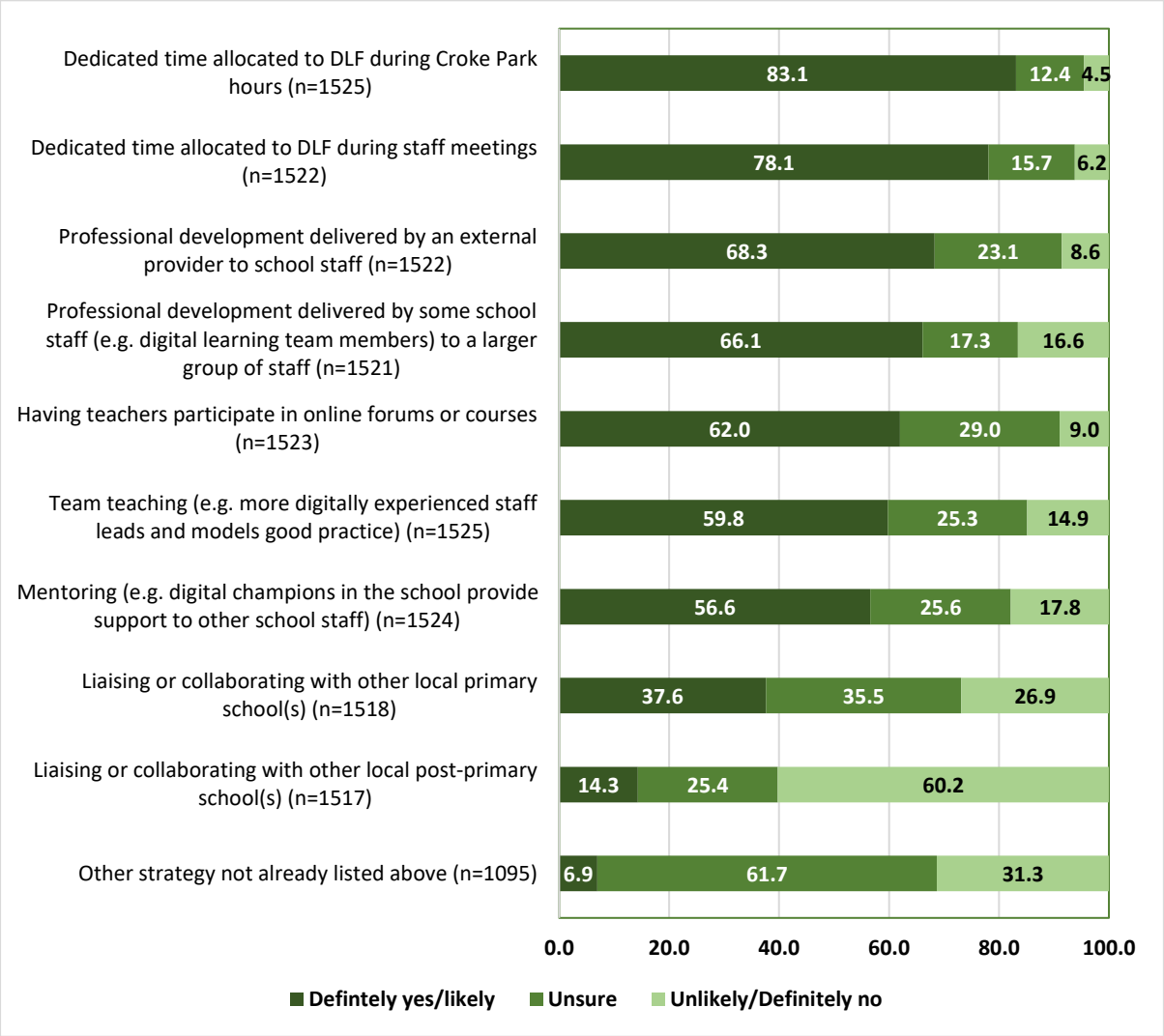
Respondents were asked about the likelihood of using 10 different strategies to promote the implementation of the DLF among teaching staff in the school (see Figure 2.2). The strategies were rated on a 5-point scale ranging from Definitely yes to Definitely no. The five response options have been collapsed to produce three categories for reporting (Definitely yes/Likely, Unsure, Unlikely/Definitely no).

The strategy most likely to be used by primary schools to promote the implementation of the DLF among teaching staff was to dedicate time allocated to DLF during Croke Park hours, with approximately four fifths (83%) of respondents indicating that they were Definitely or Likely to use this as a strategy. Figure 2.2 outlines the full list of strategies to promote the implementation of the DLF among teaching staff and the respondents' ratings of the likelihood of their use. Other strategies which were rated by 50% or more of primary school respondents as definite or likely were:

- dedicated time allocated to DLF during staff meetings – 78%
- professional development delivered by an external provider to school staff – 68%
- professional development delivered by some school staff (e.g. Digital Learning Team members) to a larger group of staff – 66%
- having teachers participate in online forums or courses – 62%
- team teaching (e.g. more digitally experienced staff leads and models good practice) – 60%
- mentoring (e.g. digital champions in the school provide support to other school staff) – 57%.

Primary schools were markedly less likely to plan to liaise or collaborate with other primary or post-primary schools to implement the DLF in their own school.

Figure 2.2. Respondents' ratings (percentages) of how likely their school is to use the following strategies to promote the implementation of the DLF among the teaching staff in their school: primary schools



2.2.2 Embedding digital technologies (DTs) in teaching, learning and assessment

In the survey, Digital Technologies (DT) were defined as

> *electronic tools, systems, and devices that generate, store or process data. These include computers, tablets, software and applications, websites, social media, multimedia, online games, robotics, cloud computing, and mobile devices.*

The survey did not include a definition of embedding digital technologies so there may be variations across schools, as well as primary and post-primary, as to what this means. However, as noted in Chapter 1, a broad definition is included in the glossary to the DLF as

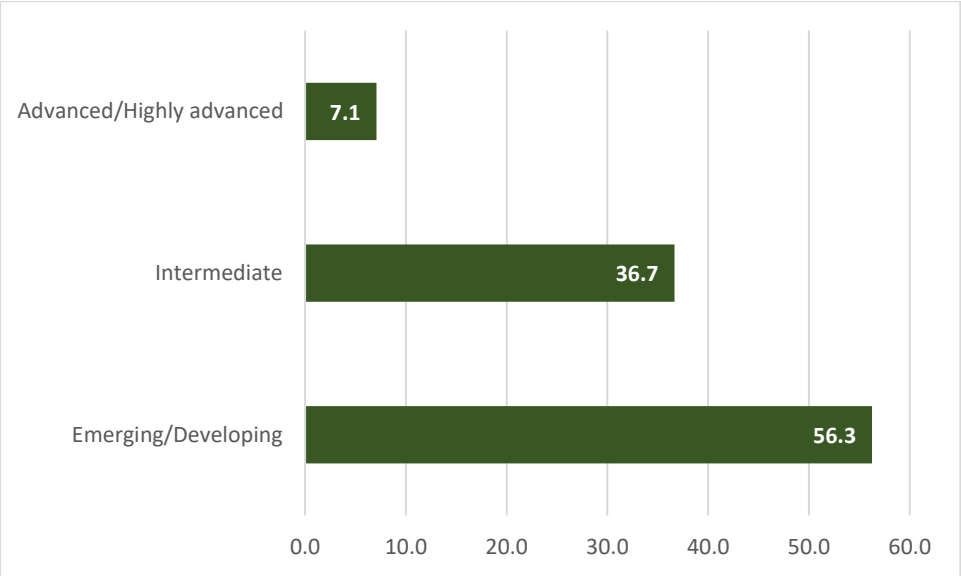
> *Moving beyond ICT integration, where digital technology is seamlessly used in all aspects of teaching, learning and assessment to enhance the learning experiences of all students.*

Respondents were asked to indicate on a 5-point scale (Emerging, Developing, Intermediate, Advanced, Highly advanced) their current level of practice in relation to embedding DTs in teaching, learning and assessment. The five response options have been collapsed to

produce three categories for reporting (Emerging/Developing, Intermediate, Advanced/Highly advanced).

Generally, primary schools reported that they were at an emerging/developing or intermediate stage in embedding DTs in teaching, learning and assessment. Over half of the respondents (56%) at primary level indicated that they were at the stage of either emerging or developing their current level of practice with embedding DTs. Approximately 37% indicated that they were at an intermediate level. A minority of schools reported that they were at an advanced stage, with 7% of respondents indicating that they were either advanced or highly advanced with respect to their current level of practice in this area (see Figure 2.3).

Figure 2.3. Primary schools' current level of practice in relation to embedding digital technologies (DTs) in teaching, learning and assessment (n=1525)



Primary school respondents were also asked to describe teachers' current *patterns* of embedding digital technologies into teaching, learning and assessment. Over half of the respondents at primary level (56%) indicated that there was some variation across teachers, 28% indicated that there was a lot of variation across teachers, while only 16% indicated that the pattern was quite uniform or similar across teachers.

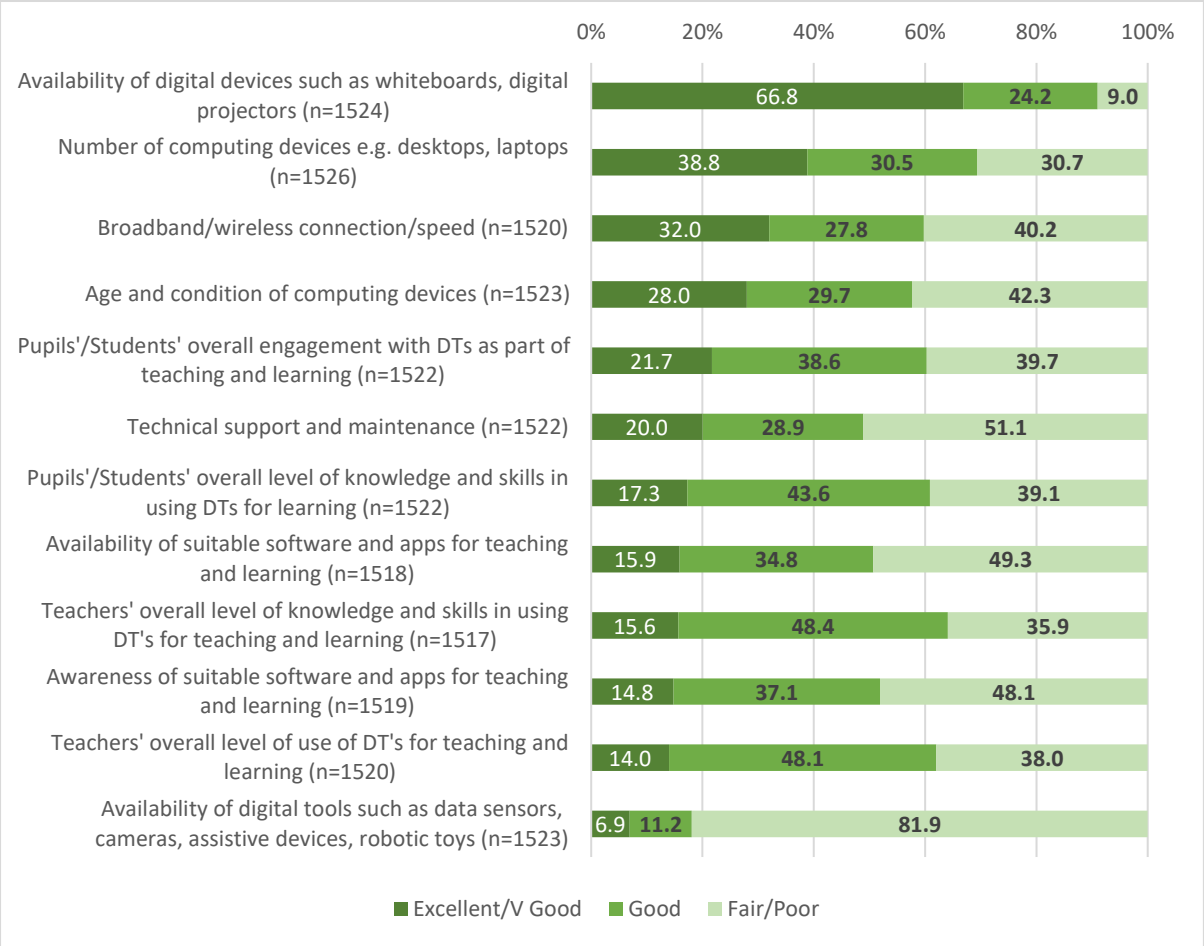
2.2.3 Views on infrastructure, connectivity and teacher and pupil engagement with DT

Ratings of 12 different aspects of digital technologies in schools (i.e. as they relate to the needs and priorities of the school) were obtained from primary school respondents. The ratings were on a 5-point scale ranging from Excellent to Poor. These response options were collapsed to produce three categories (Excellent/Very good, Good, Fair/Poor) for reporting. Results of these ratings are displayed in Figure 2.4.

Three key patterns are evident from the results. First, a large majority of primary schools 91%) rated the availability of devices such as whiteboards and digital projectors as Excellent, Very good or Good. Second, there is wide variation in the ratings assigned to most of the other items. For example, while 39% of respondents indicated that the number of

computing devices was Excellent/Very Good, 30.5% rated this item as Good and 31% rated it as Fair/Poor. Third, around two-fifths or more of schools rated the following as Fair/Poor, which suggests a need for improvement in several aspects of DT: broadband/wireless connection/speed (40%); age and condition of computing devices (42%); technical support/maintenance (51%); pupils'/students' overall engagement with DTs (40%); pupils'/students' overall level of DT knowledge/skills (39%); availability of suitable software/apps (49%); awareness of suitable software/apps (48%); teachers' overall levels of use of DT (38%). Over four-fifths (82%) indicated that the availability of digital tools such as data sensors, cameras, assistive devices were Fair/Poor.

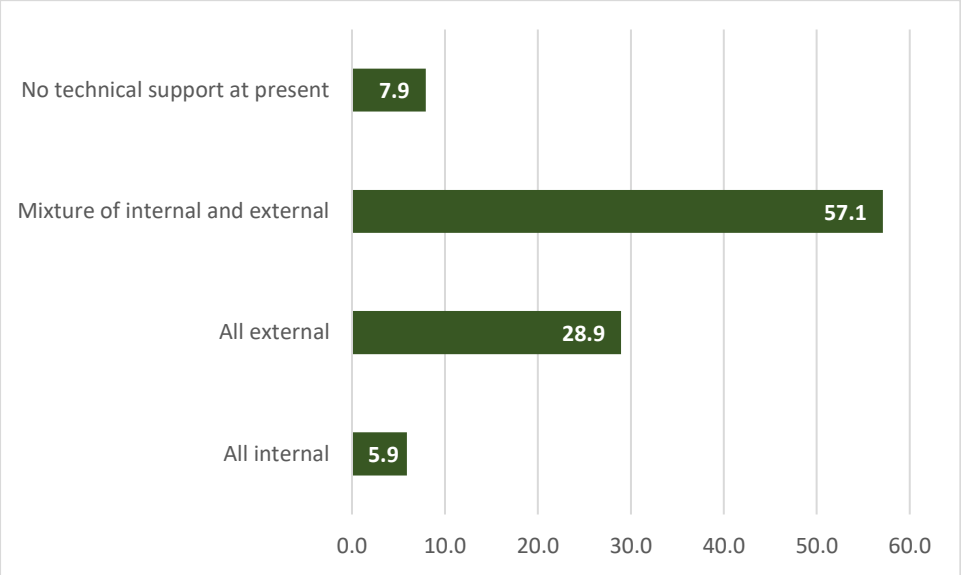
Figure 2.4. Respondents' ratings (percentages) of aspects of digital technologies in their school: primary schools



2.2.4 Technical support

Respondents were asked to indicate how technical support is provided in their schools. As seen in Figure 2.5, technical support in primary schools was most often delivered through a mixture of internal and external supports with 57% of respondents indicating that this is the case in their schools. Three in ten schools indicated (29%) that they rely solely on external technical support while in 6% of schools, all technical support was internally provided. Eight per cent of schools had no technical support at the time of the survey.

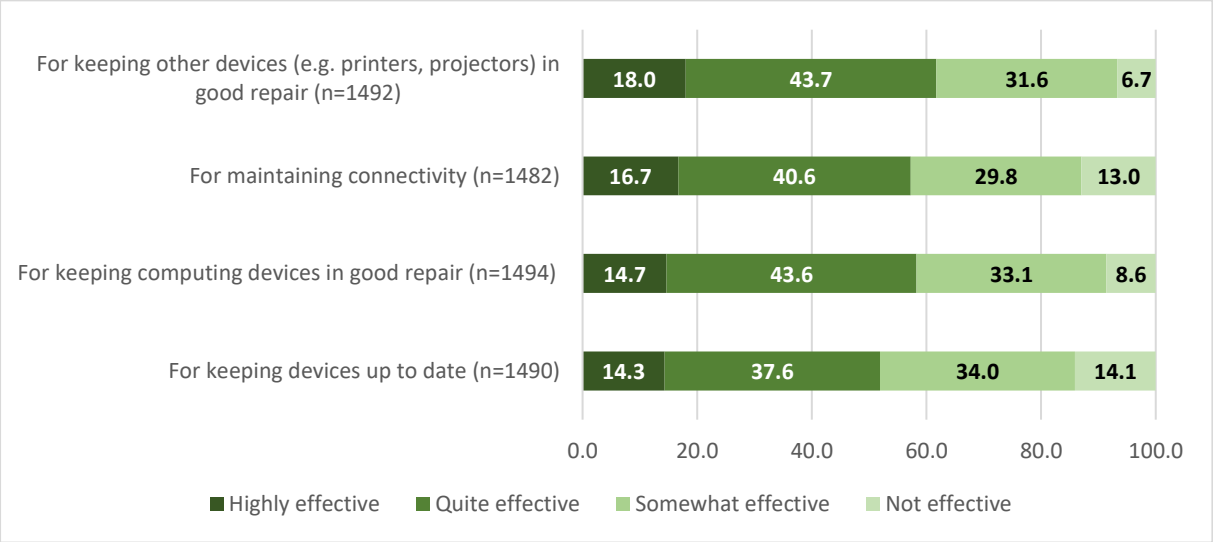
Figure 2.5. How technical support is provided in primary schools (n=1486)



Respondents were also asked to rate the effectiveness of technical support in their school for four aspects of DT maintenance (see Figure 2.6). Across the four main areas of technical support, the majority of respondents, over 50% in each instance, indicated that technical support was either Highly or Quite effective in these areas. The area with the highest rating was the effectiveness of technical support or keeping other devices (e.g. printers/projectors) in good repair, with approximately three-fifths of respondents (62%) indicating that technical support was either Highly or Quite effective in this area.

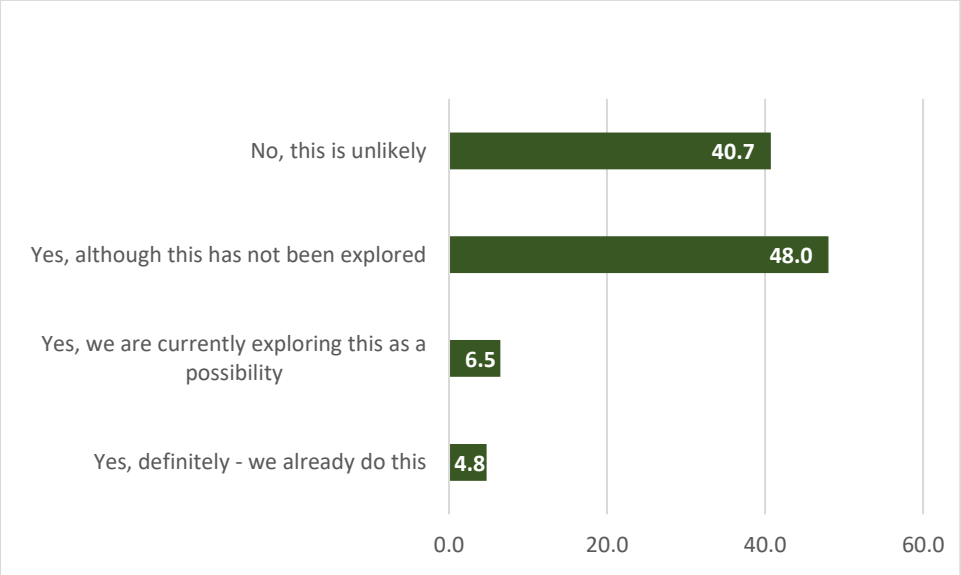
Nonetheless, the pattern of responses shows a high degree of variation across schools, similar to results shown in Figure 2.4. For example, almost equal percentages of schools indicated that technical support for keeping devices up to date was Highly effective/Effective (52%) and Somewhat effective/Not effective (48%).

Figure 2.6. Respondents' ratings (percentages) of the effectiveness of technical support in their school: primary schools



Respondents were asked to indicate whether there was capacity or opportunity for their school to collaborate with neighbouring schools to improve technical support (see Figure 2.7). About two-fifths (41%) of primary schools indicated that either this scenario was unlikely to happen, while 48% indicated that there was capacity or opportunity for the school to do this but the area had not been explored yet (48%). Much smaller percentages of respondents indicated that they were currently exploring this as an option (6.5%) or that they already do this (5%).

Figure 2.7. Respondents' ratings of whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support: primary schools (n=1494)



2.3 Key Findings from special schools

As with primary schools, the key findings from the ERC baseline survey questionnaire for special schools are described in this section under the following headings: Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; Views on infrastructure, connectivity, and teacher and pupil engagement with DT; and Technical support.

2.3.1 Implementing the DLF

The items in this section describe aspects of the implementation of the DLF in special schools. Respondents were asked to indicate whether they were taking the lead in implementing the DLF in their school. The majority of respondents, two-thirds (66%) indicated that they were taking the lead in implementing the DLF in their school while a quarter of respondents (25.5%) indicated that they were unsure.

Special school respondents were asked to indicate whether their school had established a DLT. Three fifths of respondents (60%) indicated that they had not yet established a DLT while 40% had done so.

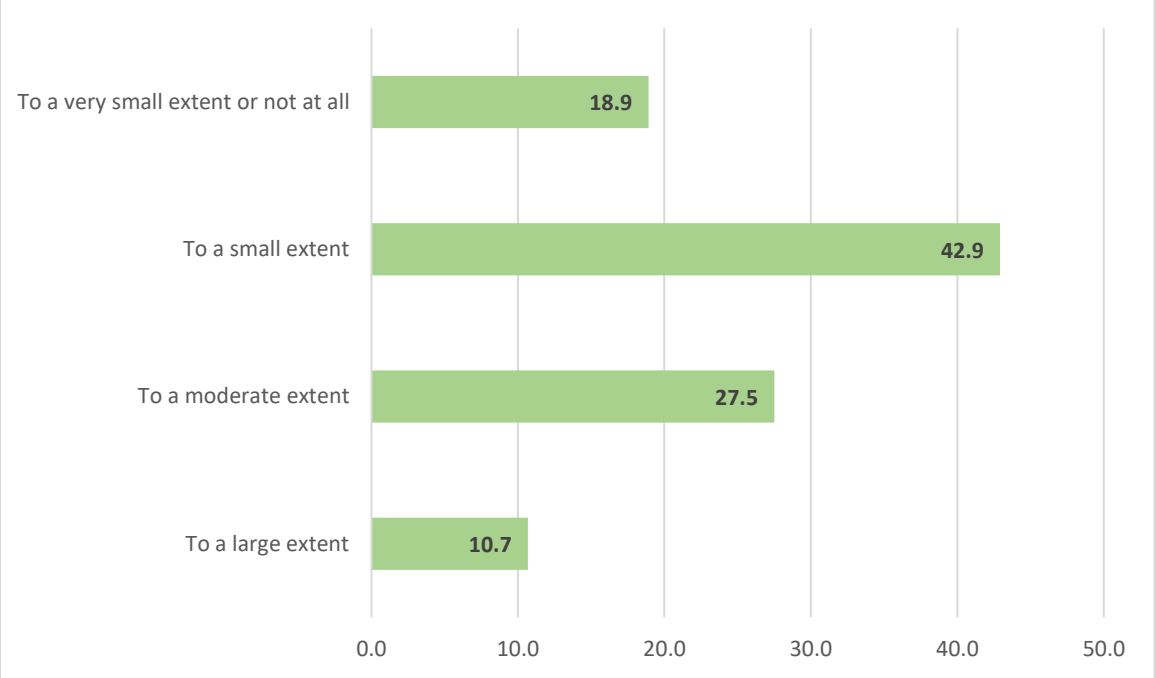
Respondents were asked to indicate which of the two DLF dimensions of the school planned to focus on (*Teaching and Learning*, or *Leadership and Management*). Two-thirds (66%)

indicated that they would focus on a domain in the *Teaching and Learning* dimension while only 5% selected the *Leadership and Management* dimension. Three in 10 special school respondents (29%) indicated that they were unsure as to which dimension of the DLF their school would focus on.

Respondents were asked to indicate whether their school had commenced the development of a Digital Learning Plan (DLP) informed by the DLF. The majority of special school respondents, approximately three fifths (57%), indicated that they had not yet commenced development of a plan, while approximately one third (36.5%) indicated that they were in the early stages of development. Notably smaller percentages indicated that they were in the latter stages of development (3%), or that the plan was completed (4%). As with primary schools (Section 2.2.1), this might be expected, given that schools would have been early in the stages of DLF implementation at the time of the survey.

Also of interest was the extent to which the DLP does or will feature in the school's overall School Planning Process over the 2018-2019 school year (see Figure 2.8). The majority of respondents indicated that the DLP would feature either to a small extent (43%) or to a moderate extent (27.5%) in the school's overall School Planning Process. Around one in five respondents (19%) indicated that the plan would feature to a very small extent or not at all. At the other end of the scale, about one-tenth (11%) of respondents indicated that the DLP would feature to a large extent.

Figure 2.8. Respondents' ratings (percentages) of the extent to which the Digital Learning Plan does or will feature in the school's overall School Planning Process over the 2018-2019 school year: special schools (n=63)



Respondents selected their schools' top five priorities for the implementation of their Digital Learning Plan from a list of 14. Results of this item are displayed in Table 2.3. Shaded areas represent the top five priorities amongst special schools as a whole. Clearly, and similar to

primary schools (Section 2.2.1), the top two rated priorities, developing teachers' skills in using specific apps or software (indicated by 75% of respondents) and developing a whole-school approach (indicated by 68% of respondents) were chosen by the majority of respondents. The other three of the top five priorities were: enhancing the use of digital technologies for assessment of learning(50%), making improvements to the sharing of documents or resources (49%), and furthering the use of digital technologies to support learners with SEN (47.5%).

Results suggest that the following areas were not a priority for most special schools: making improvements to technical maintenance and support (9%), developing a class/year level specific approach(es) (12%) and enhancing the use of digital technologies for management and administration (12%).

Table 2.3. Special schools' priorities for implementing their Digital Learning Plan (n=62)

Priority/Item	**%**
Developing teachers' skills in using specific apps or software	75.1
Developing a whole-school approach	68.4
Enhancing the use of digital technologies for assessment **of** learning	49.6
Making improvements to the sharing of documents or resources	48.6
Furthering the use of digital technologies to support learners with SEN	47.5
Using digital technologies to promote learners' interest and engagement	42.2
Enhancing the use of digital technologies for assessment **for** learning	32.7
Making improvements to digital technology infrastructure	31.6
Using digital technologies to improve learning outcomes	27.1
Enhancing the use of digital technologies in certain subject areas	21.0
Making improvements to the quality or speed of (broadband) connectivity	19.2
Enhancing use of digital technologies for management and administration	12.3
Developing a class/year level specific approach(es)	11.7
Making improvements to technical maintenance and support	9.0

Respondents also rated 10 different strategies based on how likely their school was to use them to promote the implementation of the DLF among teaching staff in the school (see Figure 2.9). The strategies were rated on a 5-point scale ranging from Definitely yes to Definitely no. The five response options have been collapsed to produce three response categories for reporting (Definitely yes/Likely, Unsure, Unlikely/Definitely no).

The strategy most likely to be used by special schools to promote the implementation of the DLF among teaching staff was to dedicate time allocated to DLF during Croke Park hours, with approximately four fifths (84%) of respondents indicating that they would definitely or likely use this as a strategy.

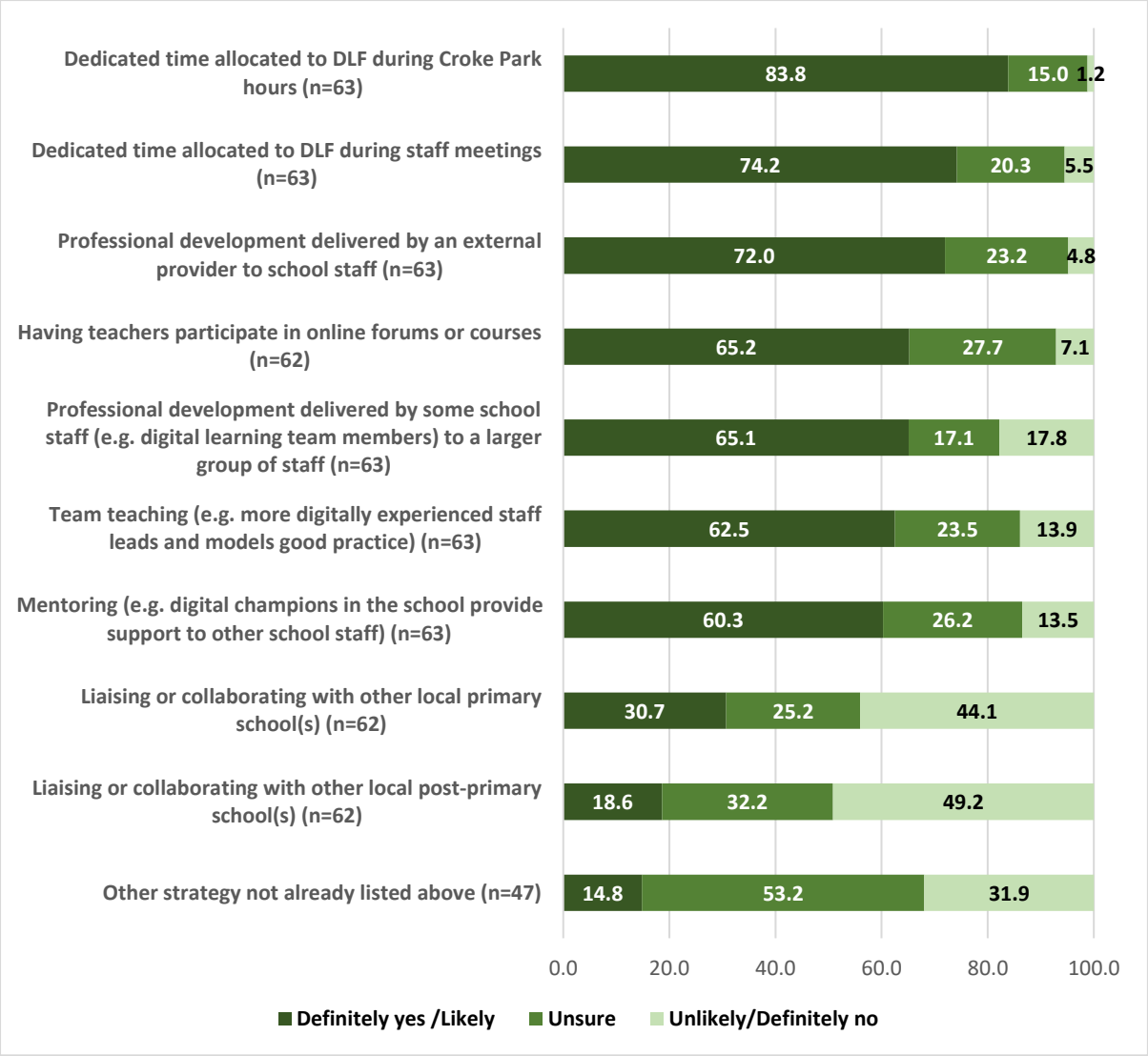
Other strategies which were rated highly by 60% or more of special school respondents were:

- dedicated time allocated to DLF during staff meetings – 74% definitely yes or likely
- professional development delivered by an external provider to school staff – 72%
- having teachers participate in online forums or courses – 65%

- professional development delivered by some school staff (e.g. Digital Learning Team members) to a larger group of staff – 65%
- team teaching (e.g. more digitally experienced staff leads and models good practice) – 62.5%
- mentoring (e.g. digital champions in the school provide support to other school staff) – 60%.

Consistent with the pattern of results on this question for primary schools, respondents in special schools indicated that they were much less likely to liaise with other primary or post-primary schools.

Figure 2.9. Respondents' ratings (percentages) of how likely their school is to use the following strategies to promote the implementation of the DLF among the teaching staff in their school: special schools

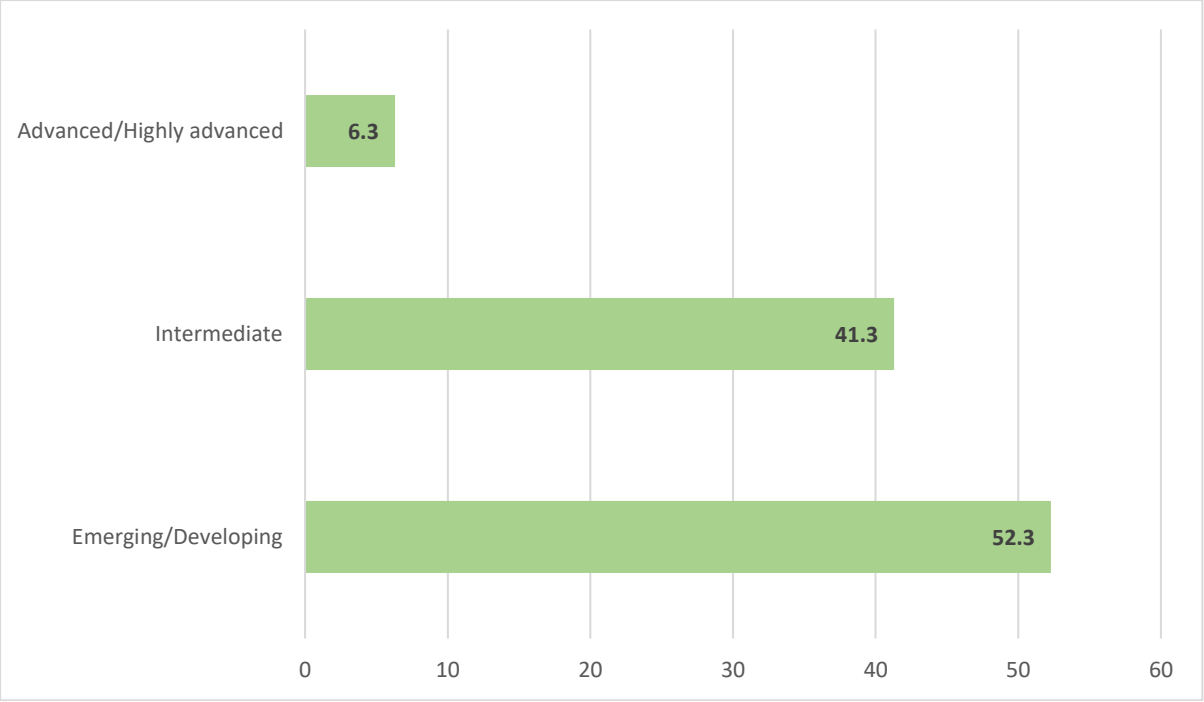


2.3.2 Embedding digital technologies (DTs) in teaching, learning and assessment

This section is concerned with embedding digital technologies in teaching, learning and assessment. See Section 2.2.2 for the definition of digital technologies provided to respondents.

Special school respondents were asked to indicate their current level of practice in relation to embedding digital technologies in teaching, learning and assessment. The five response options have been collapsed to produce three categories (Emerging/Developing, Intermediate, Advanced/Highly advanced) (Figure 2.10).

Figure 2.10. Special schools' current level of practice in relation to embedding digital technologies (DTs) in teaching, learning and assessment (n=63)



Approximately half of special school respondents (52%) indicated that they were either at the emerging or developing level of practice with embedding DTs, while two-fifths (41%) indicated that they were at an intermediate level. A minority of schools (6%) indicated that they were at an advanced level.

Special school respondents were also asked to describe teachers' current *patterns* of embedding digital technologies into teaching, learning and assessment. Special school respondents described teachers' current patterns of embedding DTs as having either some variation across teachers (42%) or as having a lot of variation across teachers (43%). A minority of 15% of respondents indicated that the pattern was quite uniform or similar across teachers.

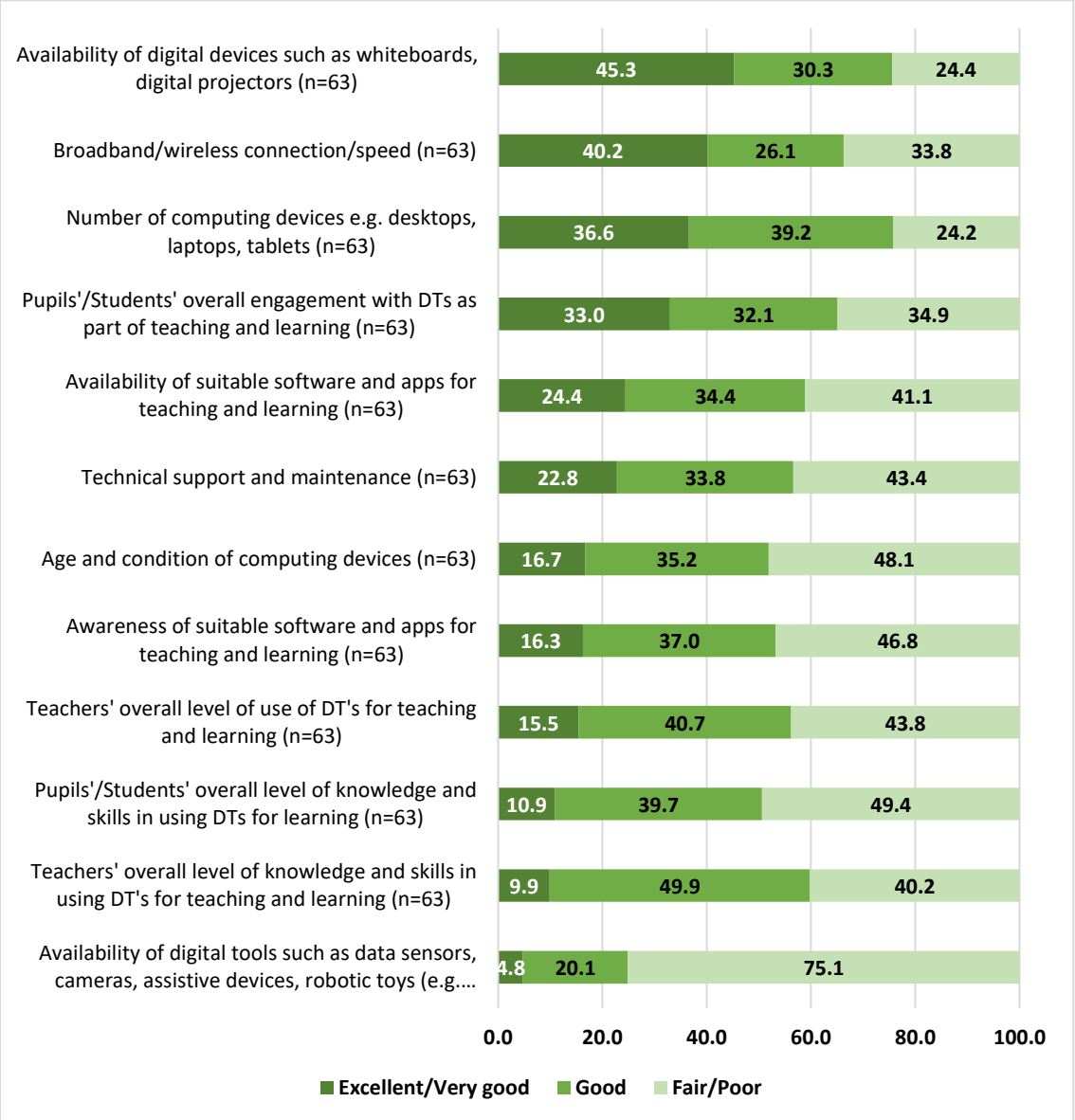
2.3.3 Views on infrastructure, connectivity and teacher and pupil engagement with DT

Ratings of 12 different aspects of digital technologies in schools (i.e. as they relate to the needs and priorities of the school) were obtained from special school respondents. The ratings were on a 5-point scale ranging from Excellent to Poor. These five response options

were collapsed to produce three categories for reporting (Excellent/Very good, Good, Fair/Poor) (Figure 2.11).

Similar to what was found at primary level (Section 2.2.3), three-quarters or more of special school respondents indicated that the availability of whiteboards and projectors, and numbers of computing devices, were Excellent, Very Good or Good. Around 65% of respondents indicated that broadband or wireless connection/speed, and pupils' overall engagement with DTs were Excellent, Very Good or Good. However, between 40% and 50% of special school respondents rated seven of the eight remaining items as Fair or Poor, including the age and condition of computing devices (48%), teachers' overall use of DTs (44%) and technical support and maintenance (43%). Three-quarters of respondents indicated that the availability of digital tools such as sensors, cameras and assistive devices was Fair or Poor.

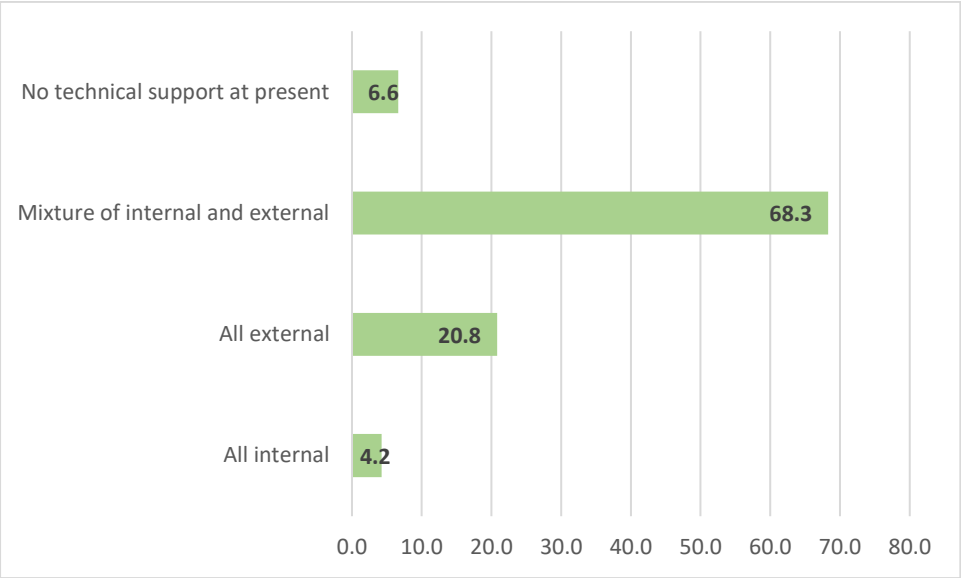
Figure 2.11. Respondents' ratings (percentages) of aspects of digital technologies in their school: special schools



2.3.4 Technical support

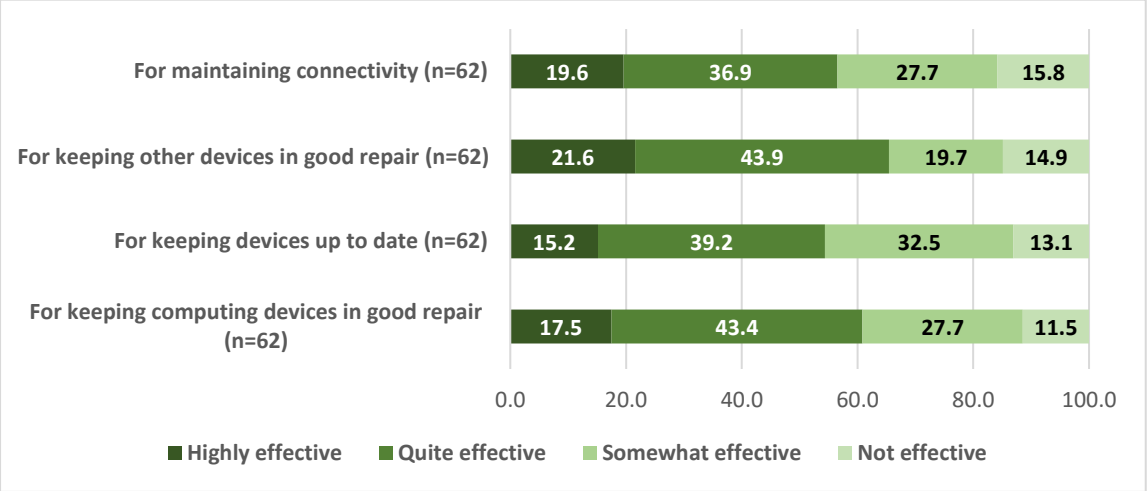
Respondents were asked to indicate how technical support is provided in their schools. Figure 2.12 shows that technical support in special schools was most often delivered through a mixture of internal and external supports (68%), while 21% indicated that they rely solely on external technical support. Just 4% of special schools reported having technical support that was managed internally, and 7% had no technical support at the time of the survey.

Figure 2.12. How technical support is provided in special schools (n=60)



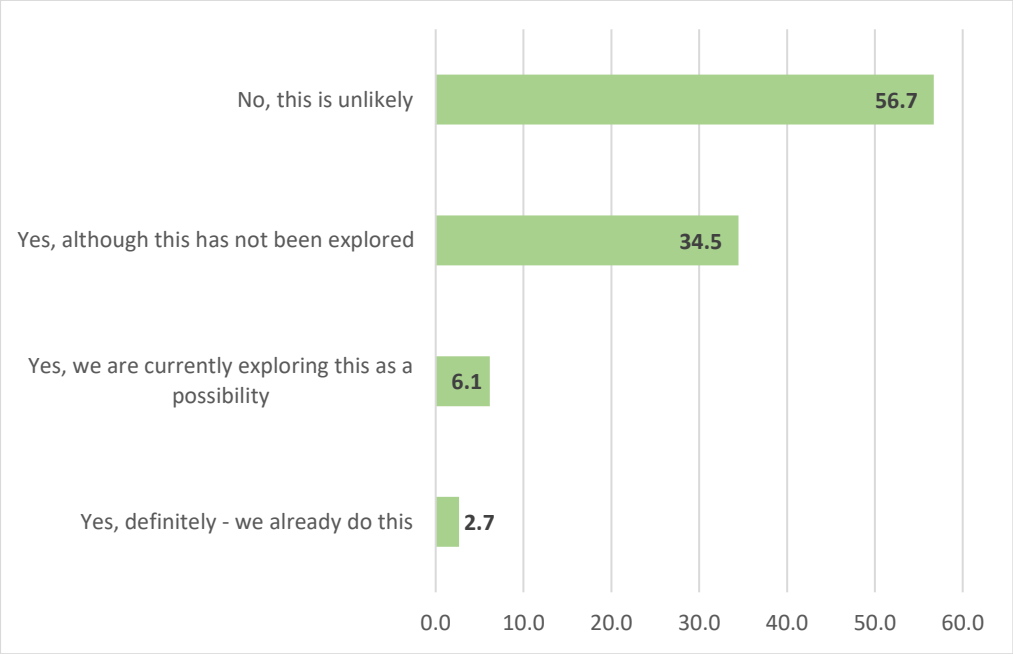
Respondents were also asked to rate the effectiveness of technical support in their school in four areas (see Figure 2.13). Between 54% and 65% of respondents rated these four aspects of technical support (maintaining connectivity, keeping computing devices in good repair, keeping devices up to date, and keeping other devices in good repair) as Quite or Highly effective. This implies that in 35-46% of schools, technical support was perceived to be Somewhat or Not effective. As with primary schools, the perceived effectiveness of technical support varies considerably across special schools.

Figure 2.13. Respondents' ratings (percentages) of the effectiveness of technical support in their school: special schools



Respondents were asked to indicate whether there is capacity or opportunity for their school to collaborate with neighbouring schools to improve technical support (see Figure 2.14). The majority of special schools indicated that either this scenario was unlikely to happen (57%) while about a third (34.5%) indicated that there was capacity or opportunity for the school to do this but it had not yet been explored. Much smaller percentages of respondents indicated that they were currently exploring this as an option (6%) or that they already do this (3%).

Figure 2.14. Respondents' ratings of whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support: special schools (n=62)



2.4 Key Findings from post-primary schools

As with primary and special schools, the key findings from the DLF-ERC baseline survey questionnaire for post-primary schools are described under: Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; Views on infrastructure, connectivity and teacher and pupil engagement with DT; and Technical support.

2.4.1 Implementing the DLF

The majority of respondents, approximately four-fifths (78%), indicated that they were taking the lead in implementing the DLF in their school. Approximately 17% of respondents indicated that they were unsure who was leading the implementation of the DLF in their school, while 5% of respondents did not plan to take the lead.

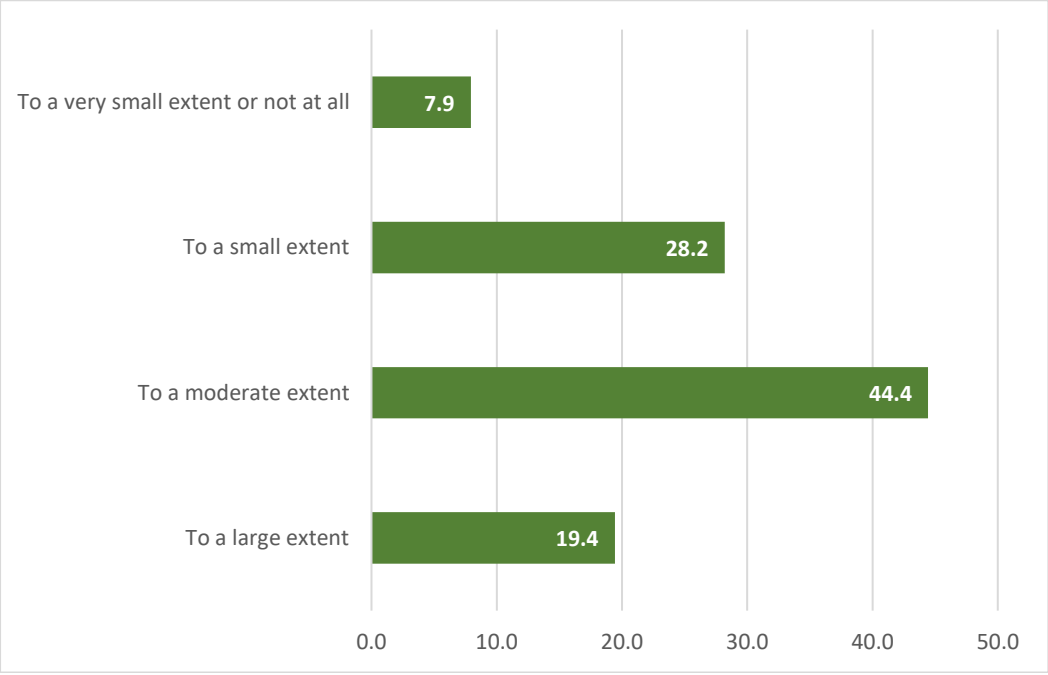
Approximately half of respondents (51.5%) indicated that they had established a Digital Learning Team (DLT) in their school while the other half (48.5%) indicated that they had not yet established a DLT in their school.

Post-primary school respondents were also asked to indicate one of two specific dimensions of the DLF which the school is planning to focus on, one of either *Teaching and Learning*, or *Leadership and Management*. The majority of respondents (71%) indicated that they would focus on a domain in the *Teaching and Learning* dimension while just 5.5% indicated that they would focus on a domain in the *Leadership and Management* dimension; 24% indicated that they were unsure as to which dimension of the DLF their school would focus on.

Respondents were asked to indicate whether their school had commenced the development of a Digital Learning Plan (DLP) informed by the DLF. The majority of post-primary schools indicated that they were in the early stages of development of a DLP (53%). Approximately two fifths of post-primary school respondents (38%) indicated that they had not yet commenced development of a DLP, which may be expected as many schools would have been in the early stages of putting their DLP together at the time of the survey. Notably smaller percentages indicated that they were in the latter stages of development (6%), or that the plan was completed (4%).

Of interest also was the extent to which the Digital Learning Plan does or will feature in the school's overall School Planning Process over the 2018-2019 school year (see Figure 2.15). As evident in Figure 2.15, the majority of respondents indicated that the DLP will feature either to a small extent (28%) or to a moderate extent (44%) in the school's overall School Planning Process. About one in five (19%) respondents indicated that the plan will feature to a large extent, while 8% indicated that the plan will feature to a very small extent or not at all.

Figure 2.15. Respondents' ratings (percentages) of the extent to which the Digital Learning Plan does or will feature in the school's overall School Planning Process over the 2018-2019 school year: post-primary schools (n=318)



Respondents selected their schools' top five priorities for the implementation of their Digital Learning Plan from a list of 14. Results of this item are displayed in Table 2.4. Shaded areas represent the top five priorities amongst special schools as a whole.

The top four rated priorities, developing a whole-school approach (indicated by 81% of respondents), developing teachers' skills in using specific apps or software (68%), making improvements to the sharing of documents or resources (59%) and enhancing the use of DTs for assessment for learning (53.5%) were chosen by 50% or more of respondents.

The results indicate that the following areas were not a priority for most post-primary schools: making improvements to the quality or speed of (broadband) connectivity (5.5%), making improvements to technical maintenance and support (9%) and developing a class/year level specific approach (12%).

Table 2.4. Post-primary schools' priorities for implementing their Digital Learning Plan (n=316)

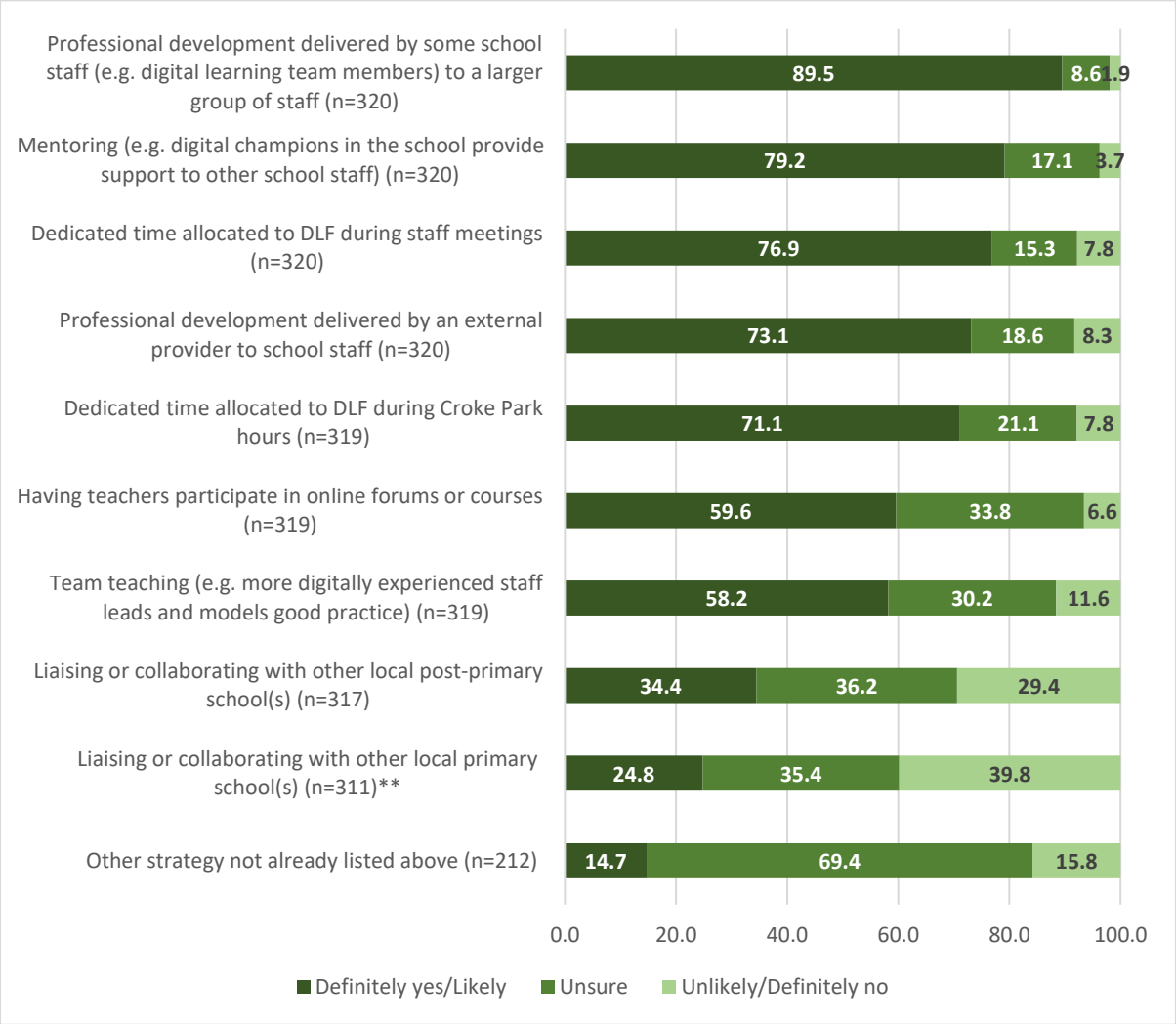
Priority/Item	%
Developing a whole-school approach	81.3
Developing teachers' skills in using specific apps or software	67.9
Making improvements to the sharing of documents or resources	59.4
Enhancing the use of digital technologies for assessment for learning	53.5
Using digital technologies to improve learning outcomes	44.0
Using digital technologies to promote learners' interest and engagement	38.1
Making improvements to digital technology infrastructure	30.1
Furthering the use of digital technologies to support learners with SEN	30.0
Enhancing use of digital technologies for management and administration	20.8
Enhancing the use of digital technologies in certain subject areas	20.7
Enhancing the use of digital technologies for assessment of learning	18.0
Developing a class/year level specific approach(s)	12.4
Making improvements to technical maintenance and support	8.6
Making improvements to the quality or speed of (broadband) connectivity	5.5

Finally for this section, post-primary respondents' ratings of 10 different strategies based on how likely their school was to use these strategies to promote the implementation of the DLF among teaching staff in the school are described (see Figure 2.16). The strategies were rated on a 5-point scale ranging from Definitely yes to Definitely no. The five response options have been collapsed to produce three response categories for reporting (Definitely yes/Likely, Unsure, Unlikely/Definitely no).

Seventy per cent or more of post-primary respondents were Definitely or Likely to use the following strategies: dedicated time allocated to DLF during Croke Park hours (71%); professional development delivered by an external provider to school staff (73%); dedicated time allocated to DLF during staff meetings (77%); mentoring (e.g. digital champions in the school provide support to other school staff) (79%); and professional development delivered by some school staff (e.g. Digital Learning Team members) to a larger group of staff (89.5%).

In contrast, just 34% of post-primary respondents indicated that they would Definitely or Likely liaise or collaborate with other local post-primary schools; and 25% indicated that they would Definitely or Likely liaise or collaborate with other local primary schools.

Figure 2.16. Respondents' ratings (percentages) of how likely their school is to use the following strategies to promote the implementation of the DLF among the teaching staff in their school: post-primary schools

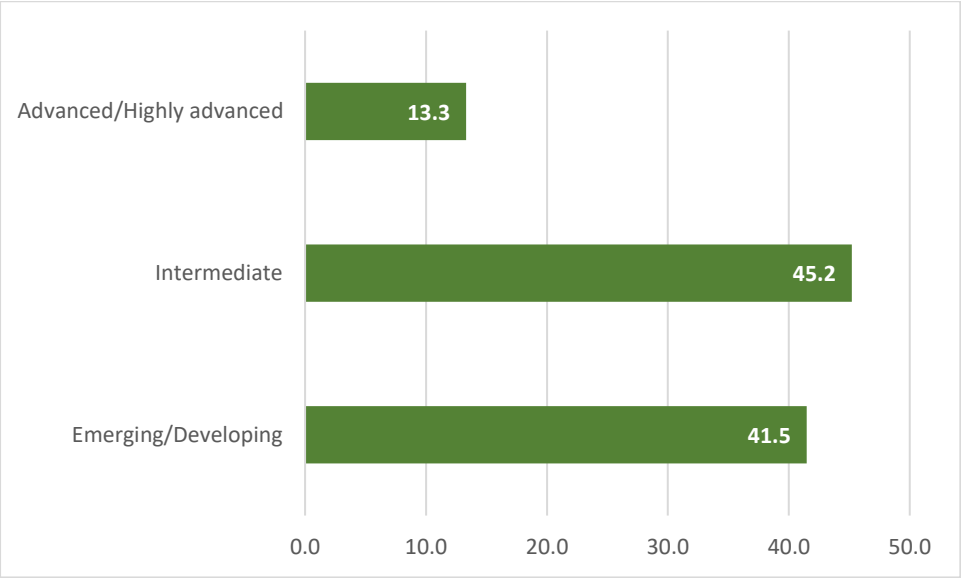


2.4.2 Embedding digital technologies (DTs) in teaching, learning and assessment

This section is concerned with embedding digital technologies in teaching, learning and assessment. See Section 2.2.2 for the definition of digital technologies provided to respondents.

Post-primary school respondents were asked to indicate on a 5-point scale (Emerging, Developing, Intermediate, Advanced, Highly advanced) their current level of practice in relation to embedding digital technologies in teaching, learning and assessment. The five response options have been collapsed to produce three categories for reporting (Emerging/Developing, Intermediate, Advanced/Highly advanced) (Figure 2.17). About one in eight post-primary respondents described their schools as advanced/highly advanced; 45% as intermediate; and 41.5% as emerging/developing.

Figure 2.17. Post-primary schools' current level of practice in relation to embedding digital technologies (DTs) in teaching, learning and assessment (n=322)



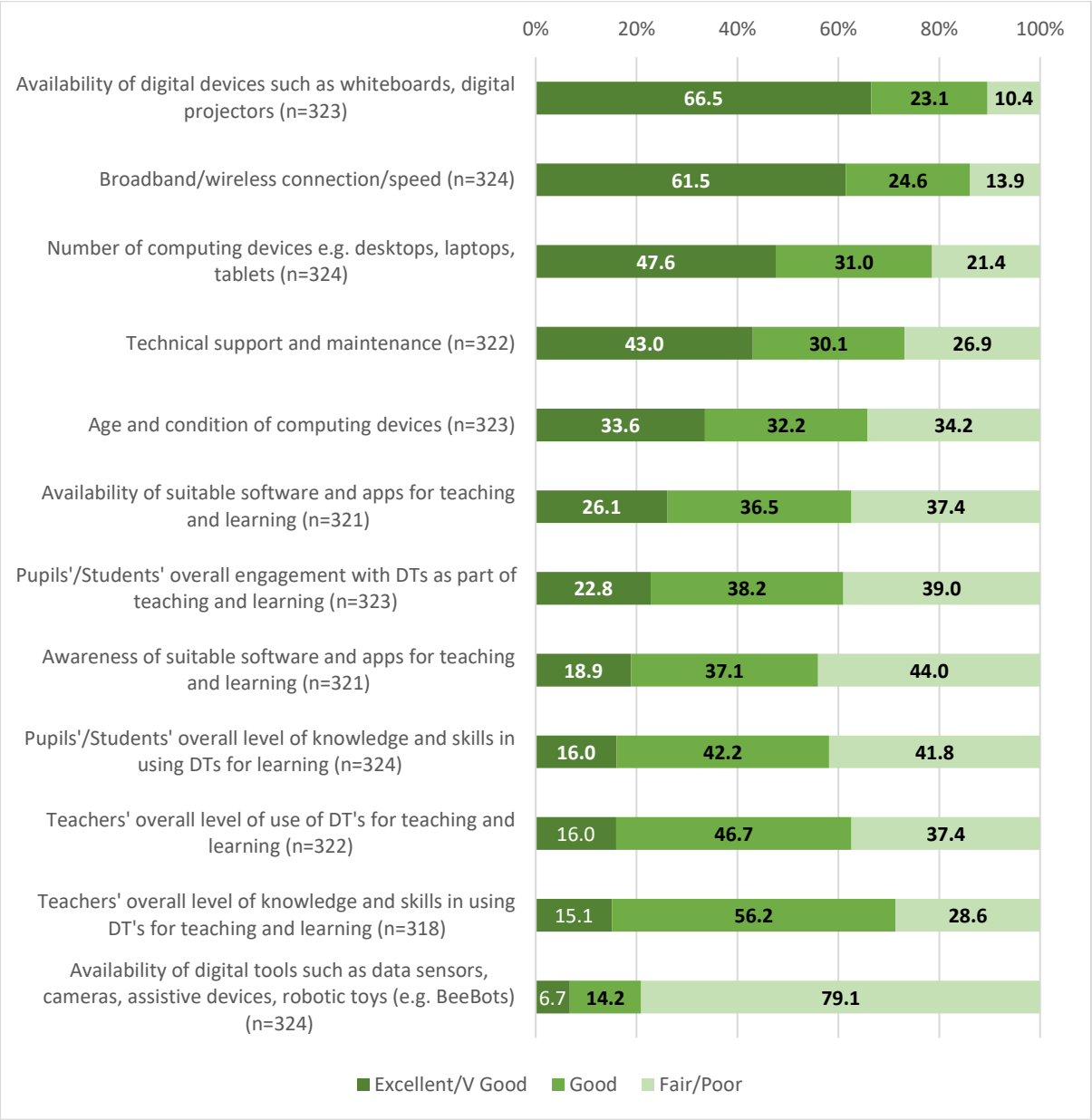
Post-primary school respondents were also asked to describe teachers' current *patterns* of embedding digital technologies into teaching, learning and assessment. The majority of post-primary respondents described teachers' current patterns of embedding DTs as having either some variation across teachers (45%) or as having a lot of variation across teachers (50%). A minority of 5% of respondents indicated that the pattern is quite uniform or similar across teachers.

2.4.3 Views on infrastructure, connectivity and teacher and pupil engagement with DT

Ratings of 12 different aspects of digital technologies in schools (i.e. as they relate to the needs and priorities of the school) were obtained from post-primary school respondents. The ratings were on a 5-point scale ranging from Excellent to Poor. These five response options were collapsed to produce three categories for reporting (Excellent/Very good, Good, Fair/Poor) (Figure 2.18).

Seventy per cent or more of respondents rated the following aspects as Excellent, Very Good or Good: availability of digital devices such as whiteboards and digital projectors; broadband/wireless connection or speed; numbers of computing devices; and technical support and maintenance. In contrast, around two in five or more post-primary respondents rated the following as Fair or Poor: students' overall level of knowledge and skills in using DTs for learning; students' level of engagement with DTs as part of teaching and learning; and awareness of suitable software/apps. Most respondents (79%) rated the availability of digital tools such as cameras and assistive technologies as Fair or Poor. Also, a majority of the items show considerable response variation across schools, consistent with the patterns of responses for primary and special schools (Sections 2.2.3 and 2.3.3).

Figure 2.18. Respondents' ratings (percentages) of aspects of digital technologies in their school: post-primary schools



2.4.4 Technical support

Figure 2.19 shows that technical support in post-primary schools was most often delivered through a mixture of internal and external supports (63.5%), while 25.5% of post-primary respondents indicated that they relied solely on external technical support. One in ten post-primary schools reported having all internal support (10.5%). A small minority indicated that they have no technical support at present (0.6%).

Respondents were also asked to rate the effectiveness of technical support in their school (see Figure 2.20). In all four areas (keeping computing devices in good repair; keeping devices up to date; keeping other devices in good repair; and maintaining connectivity), 75% or more post-primary respondents rated the technical support as Highly or Quite effective.

Figure 2.19. How technical support is provided in post-primary schools (n=302[19])

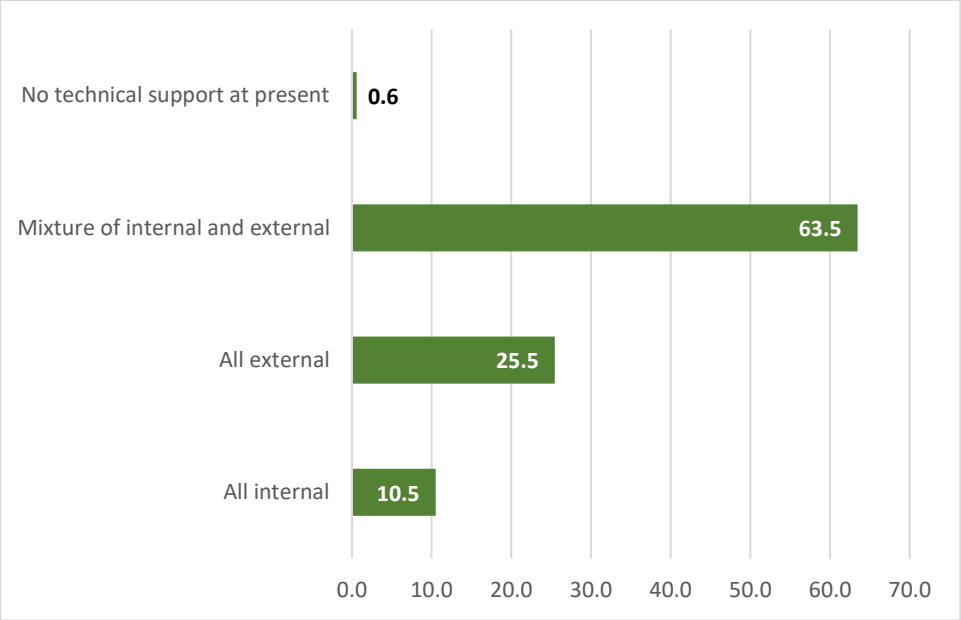
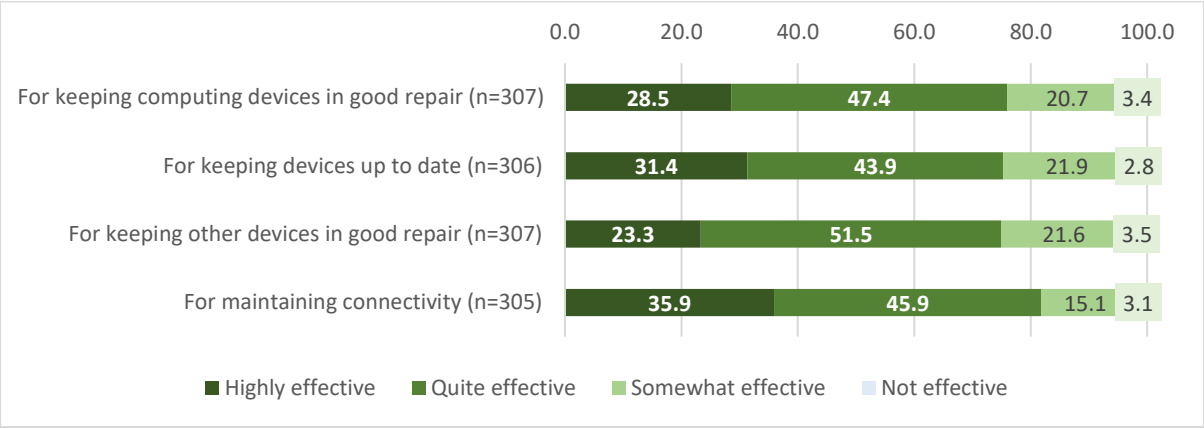


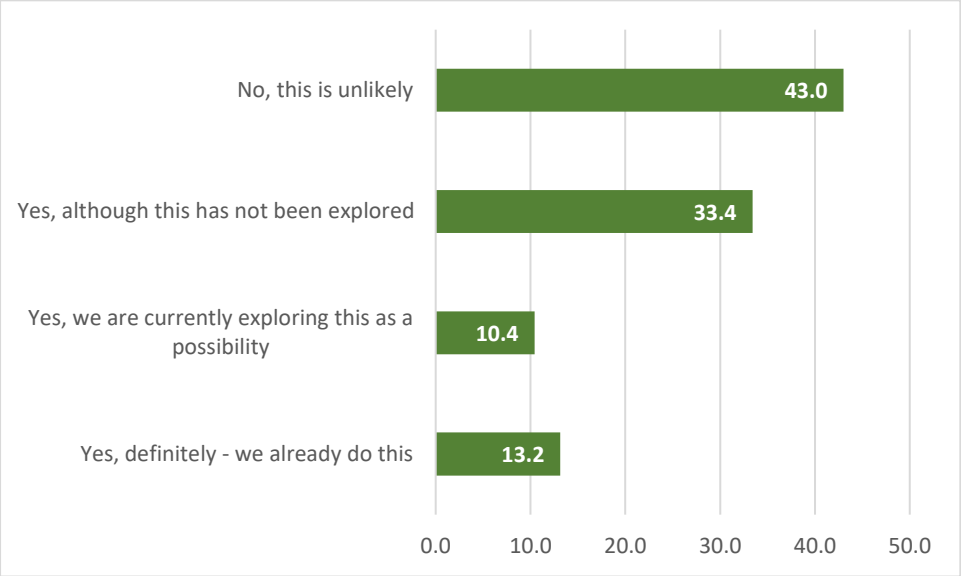
Figure 2.20. Respondents' ratings (percentages) of the effectiveness of technical support in post-primary schools at present[20]



Finally, post-primary respondents were asked to indicate whether there is capacity or opportunity for their school to collaborate with neighbouring schools to improve technical support (see Figure 2.21). About 43% of post-primary schools indicated that either this scenario was unlikely to happen; however, 33% responded that there is capacity or opportunity for the school to do this but the area has not yet been explored. Smaller percentages of respondents indicated that they were currently exploring this as a possibility (10%) or that they already do this (13%).

[19] There is 8% missing for this variable.
[20] There is between 6-7% missing for these variables.

Figure 2.21. Respondents' ratings of whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support: post-primary schools (n=312)



2.5 Similarities and differences across primary, special and post-primary schools

In this section, similarities and differences across primary, special and post-primary schools are identified and described under the following headings: Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; Views on infrastructure, connectivity and teacher and pupil engagement; and Technical support.

2.5.1 Implementing the DLF

The percentage of special school respondents who responded that they were unsure as to whether they would take the lead for implementing the DLF in their school (25.5%) was higher than that for primary (15%) and post-primary schools (17%), although these differences are not statistically significant. A Digital Learning Team had been established in 51.5% of post-primary schools, 32% of primary schools and 40% of special schools. These differences are statistically significant (χ^2=47.883; df=2, p< .001), with DLTs more likely to have been established in post-primary schools than primary or special schools.

Across the three categories of school (primary, post-primary and special), a majority (ranging from 66% to 71%) indicated that they planned to focus their DLF implementation in the *Teaching and Learning* dimension, while 24% to 29% indicated that they were unsure and just 4% to 5.5% indicated an intended focus on the *Leadership and Management* dimension. These differences are not statistically significant (y (χ^2=2.607; df=4, p= .626).

There was a statistically significant difference across the three school types in terms of the percentages which had already commenced work on their Digital Learning Plans (DLPs) for implementing the DLF. Post-primary schools were significantly more likely than primary or special schools to have commenced the development of their DLPs at the time of the seminar (χ^2=74.32; df=6, p< .001). For example, 62% of post-primary schools indicated that

they had commenced or (in a small number of cases) completed their Digital Learning Plans in comparison to 36% of primary schools and 43% of special schools.

Respondents indicated whether the DLP does or will feature in the school's overall School Planning Process over the 2018-2019 school year. Results indicate that post-primary schools were significantly more likely than both primary and special schools to specify that the Digital Learning Plan would feature in the overall School Planning Processes (χ^2=36.939; df=6, p< .001). Approximately two-thirds of post-primary schools (64%) indicated that the Digital Learning Plan would feature either to a moderate or large extent, in comparison with approximately two-fifths of special schools (38%) and approximately half of primary schools (48%).

Also in relation to the Digital Learning Plan, respondents were asked to select their school's top five priorities from a list of 14 items for the implementation of the plan. Results for this item for all three categories of schools are displayed in Table 2.5. Shaded areas represent the top five priorities amongst primary, post-primary and special schools. Differences across the three categories of schools are described here, focusing on the shaded areas which represent the top five priorities across school types.

Table 2.5. Primary, post-primary and special schools' priorities for implementing their Digital Learning Plan (top five ranks of a list of 14 items)

Priority/Item	Primary (n=1517)	Post-primary (n=316)	Special (n=62)
Developing a whole-school approach	1	1	2
Developing teachers' skills in using specific apps or software	2	2	1
Furthering the use of digital technologies to support learners with SEN	3		5
Using digital technologies to improve learning outcomes	4	5	
Using digital technologies to promote learners' interest and engagement	5		
Enhancing the use of digital technologies for assessment **of** learning			3
Making improvements to the sharing of documents or resources		3	4
Enhancing the use of digital technologies for assessment **for** learning		4	

All three school types selected developing a whole school approach and developing teachers' skills in using specific apps or software as their first or second priority which are in line with the overall objectives of the DLF. There were variations across school categories for other priorities. Primary and special schools (but not post-primary schools) selected furthering the use of digital technologies to support learners with SEN among their top five priorities. On the other hand, primary and post-primary, but not special schools, selected using digital technologies to improve learning outcomes among their top five. Both post-primary and special schools (but not primary schools) selected making improvements to the sharing of documents or resources among their top five priorities.

In primary schools only, using digital technologies to promote learners' interest and engagement was a top five priority; use of digital technologies for assessment of learning

was a priority among special schools only; and use of digital technologies for assessment for learning was a priority among post-primary schools only.

Respondents' ratings on the likelihood of using 10 different strategies to implement the DLF were compared across primary, special and post-primary schools. These comparisons indicate that the top three rated strategies for *both* primary and special schools were: dedicated time allocated to DLF during Croke Park hours; dedicated time allocated to DLF during staff meetings; and professional development delivered by an external provider to school staff.

Post-primary schools, on the other hand, were most likely to prioritise: professional development delivered by some school staff (e.g. Digital Learning Team members); mentoring (e.g. digital champions in the school provide support to other school staff); and dedicated time allocated to DLF during staff meetings.

Primary, special and post-primary schools were *all* least likely to accord high ratings to liaising or collaborating with other local primary or post-primary schools.

2.5.2 Embedding digital technologies (DTs) in teaching, learning and assessment

A significant difference was observed across the three schools types in their ratings of current level of practice in terms of embedding digital technologies in teaching, learning and assessment activities, although as noted earlier, we did not defined 'embedding' in the survey, so respondents may have varied in their understanding of the term. This said, primary schools were significantly more likely to rate themselves as emerging/developing (56%) in their current levels of practice in embedding digital technologies in teaching, learning and assessment than post-primary (41.5%) or special schools (52%). Furthermore, post-primary schools were significantly more likely to rate themselves as advanced/highly Advanced (13%) in comparison with primary (7%) and special schools (6%) (χ^2=31.964; df=6, p< .001).

2.5.3 Ratings of digital technologies in primary, post-primary and special schools

Two scales (each ranging from 0-100) measuring Digital Technology (DT) Infrastructure and Connectivity and Digital Technology Pupil/Student and Teacher Engagement were constructed on the basis of the following eight items (as described in Figures 2.4, 2.11 and 2.18).

The infrastructure and connectivity scale (Cronbach's alpha = .83-.86 across primary, special and post-primary schools) consists of the following items:

- Number of computing devices (desktops, laptops, tablets)
- Age and condition of computing devices (desktops, laptops, tablets)
- Availability of digital devices such as whiteboards, digital projectors
- Availability of digital tools such as data sensors, cameras, assistive devices, robotic toys (e.g. BeeBots)
- Awareness of suitable software and apps for teaching and learning
- Availability of suitable software and apps for teaching and learning
- Broadband/wireless connection/speed
- Technical support and maintenance.

The student/pupil and teacher engagement scale (Cronbach's alpha = .85-.86 across primary, special and post-primary schools) consists of the following items:

- Teachers' overall level of knowledge and skills in using digital technologies for teaching and learning
- Teachers' overall level of use of digital technologies for teaching and learning
- Pupils'/Students' overall level of knowledge and skills in using digital technologies for learning
- Pupils'/Students' overall engagement with digital technologies as part of teaching and learning.

Table 2.6 shows the scale descriptives for the three categories of school on each of these scales. The infrastructure and connectivity mean in post-primary schools (51.8) is significantly higher than the means for primary (43.6) and special (43.0) schools ($F(2, 1912) = 28.54$, $p<.001$). In contrast, the pupil/student and teacher engagement scale means do not differ across the three types of school.

Table 2.6. Means on digital technology infrastructure and connectivity, and teacher and pupil engagement scale, by school type

School Type	**n**	***DT Infrastructure and Connectivity***		***Pupil/Student and Teacher Engagement with DT***	
		Mean	**SD**	**Mean**	**SD**
Post-primary	324	51.8	18.1	44.4	17.1
Primary	1528	43.6	18.0	43.8	17.4
Special	63	43.0	19.3	42.4	17.1

2.5.4 Technical support

As noted earlier, technical support can be delivered either solely through internal support, solely through external support, through a mixture of internal and external support, or schools may have no technical support at present.

A significant difference was observed across the three school types in terms of technical support provision ($\chi^2=34.07$, $df=8$, $p<.001$).

- Special (7%) and primary schools (8%) were significantly more likely than post-primary schools (1%) to have no technical support in the school at the time of the survey.
- Primary schools (29%) were more likely than post-primary (25.5%) or special schools (21%) to solely use external support in their school.
- Special schools (68%) were significantly more likely than primary (57%) or post-primary schools (63.5%) to have a mixture of internal and external technical support in the school.
- Post-primary schools (10.5%) were significantly more likely than special (4%) or primary schools (6%) to solely use internal support in their school.

Respondents were also asked to rate the effectiveness of technical support in their school across four areas of technical support. Responses were combined to form a scale measuring perceived effectiveness of technical support, with values ranging from 0-100 and higher

values indicating higher perceived effectiveness. Cronbach's alpha ranges from .87 - .89 across primary, post-primary and special schools.

Table 2.7 shows the scale descriptives for the three categories of school on this scale. The mean in post-primary schools (67.8) is significantly and substantially higher than the means for primary (54.2) and special (54.6) schools ($F(2, 1861) = 38.74$, $p<.001$).

Table 2.7. Means on perceived effectiveness of technical support, by school type

School Type	**n**	***Perceived effectiveness of technical support***	
		Mean	**SD**
Post-primary	307	67.8	22.4
Primary	1495	54.2	25.0
Special	62	54.6	27.3

School respondents were also asked to indicate whether there is capacity or opportunity for their school to collaborate with neighbouring schools to improve technical support. A significant difference was observed across the three school types for whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support ($\chi^2=54.463$, $df=6$, $p<.001$). Post-primary schools (24%) were significantly more likely than primary (11%) or special schools (9%) to indicate that they intended to explore collaboration as a possibility or that they were already doing this.

2.6 Key points from Chapter 2

In all, 1,524 responses to the ERC baseline survey were received from primary schools, 320 from post-primary schools, and 64 from special schools. Respondents completed the ERC survey during the PDST Technology in Education seminars. One response per school was completed. In many cases, more than one member of staff from each school was present. At primary level, 65% of questionnaires were completed by two people while at post-primary level, 47% were completed by two people, and 56% of special schools questionnaires were completed by two people. Weights were applied to the analyses so that the results are representative of the national populations of primary, post-primary and special schools (in terms of structural and demographic characteristics such as enrolment size, DEIS status and urban-rural location).

At primary level, about 70% of respondents were principals, 37% were class teachers, 28% were deputy principals, 18% were special education teachers, and 15% were assistant principals. At post-primary level, subject teachers comprised the most frequent respondent group (50.5%), with 25-35% of respondents falling into the categories of principal, deputy principal or assistant principal. In special schools, respondents were most commonly principals (50%) or class teachers (42%).

In rating their current (baseline) level of embedding digital technologies in teaching, learning and assessment, respondents chose one of five options (Emerging, Developing, Intermediate, Advanced, Highly advanced). Primary schools were significantly more likely to rate their school as emerging or developing (56%) in their current levels of practice than

post-primary (41.5%) or special schools (52%). Post-primary school respondents were significantly more likely to rate their school as advanced or highly advanced (13%) in comparison with primary (7%) and special schools (6%). These overall ratings, with quite high percentages of schools rating themselves as emerging or developing, are consistent with the international literature reviewed in Chapter 1 (Section 1.1.5). Comparisons across primary, post-primary and special schools should bear in mind that these school types may have differed in their understanding of the term 'embedding'.

At baseline stage, post-primary schools were generally slightly further along their journey of implementing the DLF than primary and special schools. For example, 62% of post-primary schools indicated that they had commenced or (in a small number of cases completed) their Digital Learning Plans in comparison to 36% of primary schools and 43% of special schools. Also, post-primary schools were significantly more likely than primary and special schools to specify that the Digital Learning Plan (for implementing the DLF) would feature in the overall School Planning Processes. About 64% of post-primary schools indicated that the Digital Learning Plan would feature either to a moderate or large extent, in comparison with 38% of special schools and 48% of primary schools.

Across all three categories of school, among the top priorities identified in implementing the DLF were the development of a whole-school approach and developing teachers' skills in using specific apps or software. This confirms that schools' planned priorities are very much in line with the overall objectives of the DLF. On the other hand, primary and special schools (but not post-primary schools) indicated that furthering the use of digital technologies to support learners with SEN was among their top priorities. Also, primary and post-primary, but not special schools, responded that using digital technologies to improve learning outcomes was among their top priorities; and both post-primary and special schools (but not primary schools) indicated that they wanted to make improvements to the sharing of documents or resources as a high priority.

Respondents' rated the likelihood of using 10 different strategies to implement the DLF. The top three rated strategies for both primary and special schools were dedicated time allocated to DLF during Croke Park hours, dedicated time allocated to DLF during staff meetings, and professional development delivered by an external provider to school staff. Post-primary schools, on the other hand, indicated that the most likely strategies that they would use were professional development delivered by some school staff (e.g. Digital Learning Team members), mentoring (e.g. digital champions in the school provide support to other school staff), and dedicated time allocated to DLF during staff meetings. These findings suggest that a train-the-trainer/internal capacity-building strategy in implementing the DLF is preferred in post-primary schools, while primary and special schools had a higher preference for externally-provided training and development. These variations could be related to school size, where it is likely to be easier to implement a mentoring approach with a larger body of staff. All three categories of school were least likely to accord a high rating to liaising or collaborating with other local primary or post-primary schools as a strategy to implement the DLF.

There was a lot of variation across schools in perceived levels of infrastructure, connectivity and teacher and student/pupil engagement with digital technologies. Staff-rated

infrastructure and connectivity was significantly and substantially higher in post-primary than primary and special schools. In contrast, the three categories of school did not differ in terms of perceived levels of pupil/student and teacher engagement with digital technologies. This finding could suggest that schools are rating teachers' and students' engagement with digital technologies relative to the levels of infrastructure and connectivity.

Although a majority of schools indicated that technical support for digital technologies was provided using both internal and external resources, the three categories of school varied in this respect. Special schools (68%) were significantly more likely than primary (57%) or post-primary schools (63.5%) to have a mixture of internal and external technical support in the school. Primary schools (29%) were more likely than post-primary (25.5%) or special schools (21%) to solely use external support in their school, while post-primary schools (10.5%) were significantly more likely than special (4%) or primary schools (6%) to solely use internal support in their school.

Respondents also rated the effectiveness of technical support in their school for issues such as maintaining devices in good repair and maintaining connectivity. The perceived effectiveness of technical support was significantly and substantially higher in post-primary schools compared with primary and special schools.

Chapter 3: Comparisons of sub-groups of schools

This chapter presents the results of the analyses of sub-groups of schools. Results are presented in four sections:

- Primary schools (including sub-groups of interest: DEIS status, enrolment size, gender composition)
- Special schools (sub-groups of interest: enrolment size)
- Post-primary schools (sub-groups of interest: DEIS status, enrolment size, sector and gender composition)
- Key variations across schools.

Initial findings are presented under the following headings: Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; and Technical support. Results are then described for primary, special and post-primary schools across two variables: Digital technology (DT) infrastructure and connectivity scale, and DT teacher and pupil engagement scale which comes under the heading: Ratings of digital technologies.

Comparisons of different school characteristics can provide insights into how schools are planning to implement the DLF, and what challenges they may be encountering. This information can be used to identify whether universal or targeted, tailored approaches and strategies may work better.

3.1 Primary schools

3.1.1 Implementing the DLF

Respondents were asked to indicate whether their school had commenced the development of a Digital Learning Plan (DLP) for the implementation of the DLF. Results indicate that very small (68%) and small schools (71%) were more likely to indicate that they had not yet commenced development of the DLP compared with medium (59%) and large schools (57%) (see Table 3.1) (X^2 = 27.478; df=9; p = .001). No significant differences were observed for this item in primary schools by the sub-groups DEIS status or gender composition.

The extent to which the Digital Learning Plan does or will feature in primary schools' overall School Planning Processes over the 2018-2019 school year was also of interest. However, no significant differences were observed in primary schools for this item across the sub-groups enrolment size, DEIS status or gender composition.

Table 3.1. Respondents' ratings (percentages) of whether primary schools have commenced the development of a Digital Learning Plan, by enrolment size (n=1525)

	very small up to 65	small 66 to 130	medium 131 to 250	large 251 or more
No, not yet commenced development	68.2	71.4	58.9	57.4
Yes, early stages of development	28.7	24.0	36.4	36.1
Yes, latter stages of development	1.3	2.6	2.3	3.8
Yes, completed	1.8	2.0	2.3	2.7

Respondents were asked about the likelihood of using 10 different strategies to promote the implementation of the DLF among teaching staff in the school. The strategies were rated on a 5-point scale ranging from Definitely yes to Definitely no. The five response options have been collapsed to produce three categories for reporting (Definitely yes/Likely, Unsure, Unlikely/Definitely no). Table 3.2 presents the full list of strategies and whether significant differences emerged among primary schools by DEIS status, enrolment size or gender composition (items marked with an asterisk indicate there was a significant difference).

Table 3.2. Ten strategies to promote the implementation of the DLF among teaching staff in the school and whether subgroup differences exist across primary schools by DEIS status, enrolment size or gender composition

Strategy	DEIS status	enrol	gender
Professional development delivered by some schools staff to a larger group of staff	*	***	
Professional development delivered by an external provider to school staff	*	*	
Dedicated time allocated to DLF during staff meetings			
Dedicated time allocated to DLF during Croke Park hours			
Team teaching		***	
Mentoring	***	***	
Having teachers participate in online forums or courses			
Liaising or collaborating with other local primary schools			
Liaising or collaborating with other local post-primary schools		***	

*** p < .001, ** p < .01, * p < .05.

Urban Band 1 and Urban Band 2 DEIS schools were significantly more likely to select professional development delivered by some school staff to a larger group of staff as a strategy to implement the DLF compared to Rural DEIS and non-DEIS schools (X^2 = 23.878; df=12; p < .05). Also, schools with larger enrolment sizes were significantly more likely to select this strategy than smaller schools (X^2 = 129.525; df=12; p < .001) (Table 3.3).

Table 3.3. Primary school respondents' ratings (percentages) of professional development delivered by some school staff (e.g. Digital Learning Team members) to a larger group of staff as a strategy to promote the implementation of the DLF, by DEIS status and enrolment size (N=1521)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
Definitely yes/Likely	66.2	75.9	73.1	56.4
Unsure	17.4	11.4	17.9	20.8
Unlikely/Definitely no	16.5	12.7	9.0	22.8
Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
Definitely yes/Likely	54.1	61.4	72.7	76.5
Unsure	18.1	18.0	16.7	16.7
Definitely no/Unlikely	27.8	20.6	10.7	6.8

Urban Band 2 schools were more likely than Band 1, Rural or non-DEIS schools to indicate that professional development delivered by an external provider to school staff would be used in implementing the DLF (X^2 = 23.299; df=12; p< .05). Also, schools with the smallest enrolment sizes (i.e. up to 65 pupils) were significantly less likely to select this strategy than schools with larger enrolment sizes (X^2 = 23.658; df=12; p<.05) (see Table 3.4).

Table 3.4. Primary school respondents' ratings (percentages) of professional development delivered an external provider to school staff as a strategy to promote the implementation of the DLF, by DEIS status and enrolment size (N=1522)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
Definitely yes/Likely	67.2	63.6	81.0	72.2
Unsure	24.0	24.7	11.4	21.9
Definitely no/Unlikely	8.7	11.7	7.6	6.0
Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
Definitely yes/Likely	61.4	68.5	72.0	71.6
Unsure	28.3	23.1	21.0	19.9
Definitely no/Unlikely	10.2	8.5	7.0	8.5

The use of team teaching as an implementation strategy was significantly less likely in schools with smaller enrolment sizes (X^2 = 81.782; df=12; p < .001) (Table 3.5).

Table 3.5. Primary school respondents' ratings (percentages) of team teaching as a strategy to promote the implementation of the DLF, by enrolment size (n=1525)

Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
Definitely yes/Likely	51.7	56.9	62.2	69.1
Unsure	25.2	23.0	29.5	23.5
Definitely no/Unlikely	23.1	20.2	8.3	7.4

Mentoring as a strategy was significantly more likely in DEIS Urban Band 1 and Urban Band 2 schools compared with DEIS Rural and non-DEIS schools (X^2 = 37.110; df=12; p<.001). A significant difference was also observed in relation to the use of mentoring by enrolment size, i.e. it was more likely among schools with larger enrolment sizes (X^2 = 81.782; df=12; p< .001) (Table 3.6).

Finally, liaising or collaborating with other local post-primary schools, although relatively infrequently selected as a likely implementation strategy, was significantly more likely among schools with larger than smaller enrolment sizes (X^2 = 33.874; df=12; p < .001) (Table 3.7).

Table 3.6. Primary school respondents' ratings (percentages) of mentoring as a strategy to promote the implementation of the DLF, by DEIS status and enrolment size (n=1524)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
Definitely yes/Likely	56.1	68.4	72.2	46.7
Unsure	26.6	17.7	21.5	23.3
Definitely no/Unlikely	17.4	13.9	6.3	30.0
Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
Definitely yes/Likely	45.5	48.7	62.4	70.4
Unsure	23.4	28.8	28.5	21.4
Definitely no/Unlikely	31.1	22.4	9.1	8.2

Table 3.7. Primary school respondents' ratings (percentages) of liaising or collaborating with other local post-primary school(s) as a strategy to promote the implementation of the DLF, by enrolment size (n=1517)

Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
definitely yes/likely	12.6	10.0	18.0	17.1
unsure	26.3	22.8	27.3	25.1
definitely no/unlikely	61.1	67.2	54.7	57.9

In relation to the Digital Learning Plan (DLP) for the implementation of the DLF, respondents were requested to select their schools' top five priorities from a list of 14 for the implementation of the plan. Table 3.8 presents the full list of 14 items. Those with an asterisk represent items where significant differences were observed either by DEIS status, enrolment size or gender composition.

Table 3.8. Primary schools' priorities for implementing the Digital Learning Plan and whether subgroup differences exist by DEIS status, enrolment size or gender composition

Priority/Item	**DEIS status**	**enrol**	**gender**
Developing a whole-school approach			
Developing teachers' skills in using specific apps or software			
Furthering the use of digital technologies to support learners with SEN			
Using digital technologies to improve learning outcomes			
Using digital technologies to promote learners' interest and engagement			
Enhancing the use of digital technologies in certain subject areas		***	
Making improvements to digital technology infrastructure			
Developing a class level specific approach(s)	*	***	
Enhancing the use of digital technologies for assessment **of** learning	*		
Making improvements to the sharing of documents or resources	***	***	
Enhancing the use of digital technologies for assessment **for** learning	***		
Making improvements to the quality or speed of (broadband) connectivity			
Enhancing use of digital technologies for management and administration		*	
Making improvements to technical maintenance and support			

*** p < .001, ** p < .01, * p < .05.

The first priority which displayed a difference across subgroups is enhancing the use of digital technologies in certain subject areas (see Table 3.9). Large schools (with an enrolment size of 251 or more) were less likely to select this item as one of their top five priorities than schools with smaller enrolment sizes (X^2 = 43.982; df=3; p< .001).

Table 3.9. Primary school respondents' ratings (percentages)of enhancing the use of digital technologies in certain subject areas, by enrolment size (n=1518)

Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
No	53.3	66.6	65.4	76.3
Yes	46.7	33.4	34.6	23.7

Developing a class level specific approach to using digital technologies for teaching and learning was less likely to be prioritised in Rural DEIS schools than non-DEIS, Urban Band 1 or Urban Band 2 schools (X^2 = 10.468; df=3; p< .05) and more likely to be prioritised in schools with larger enrolment sizes (X^2 = 21.023; df=3; p< .001) (see Table 3.10).

Table 3.10. Primary school respondents' ratings (percentages) of developing a class level specific approach to using digital technologies for teaching and learning, by DEIS status and enrolment size (n=1518)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
No	66.1	68.4	67.1	79.2
Yes	33.9	31.6	32.9	20.8
School Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
No	74.5	69.4	66.5	59.1
Yes	25.5	30.6	33.5	40.9

In contrast, enhancing the use of digital technologies for assessment <u>of</u> learning was more likely to be prioritised in DEIS Rural schools than other school types (X^2 = 7.856; df=3; p < .05) (Table 3.11).

Table 3.11. Primary school respondents' ratings (percentages) of enhancing the use of digital technologies for assessment of learning, by DEIS status (n=1518)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
No	69.8	73.4	78.5	61.7
Yes	30.2	26.6	21.5	38.3

Making improvements to the sharing of teaching documents or resources was more likely to be prioritised among DEIS Urban Band 1 and 2 compared to DEIS Rural and non-DEIS schools (X^2 = 22.386; df=3; p<.001), and was also more likely in schools with larger enrolment sizes relative to very small schools (X^2 = 33.971; df=3; p < .001) (Table 3.12).

Table 3.12. Primary school respondents' ratings (percentages) of making improvements to the sharing of teaching documents or resources, by DEIS status and enrolment size (n=1518)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
No	71.0	60.8	53.2	80.5
Yes	29.0	39.2	46.8	19.5
School Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
No	80.8	71.4	67.4	62.0
Yes	19.2	28.6	32.6	38.0

With respect to enhancing the use of digital technologies for assessment for learning, DEIS Urban Band 2 and DEIS Rural schools were more likely to prioritise this than non-DEIS and DEIS Urban Band 2 schools (X^2 = 10.808; df=3; p<.05) (Table 3.13).

Table 3.13. Primary school respondents' ratings (percentages) of enhancing the use of digital technologies for assessment for learning, by DEIS status (n=1518)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
No	72.8	72.2	58.2	65.1
Yes	27.2	27.8	41.8	34.9

Enhancing the use of digital technologies for management and administration was not prioritised to the same degree as many of the other items, but nonetheless was significantly less frequently prioritised among very small schools compared with schools with larger enrolment sizes (X^2 = 8.243; df=3; p < .05) (Table 3.14).

Table 3.14. Primary school respondents' ratings (percentages) of enhancing the use of digital technologies for management and administration, by enrolment size (n=1518)

Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
No	90.8	85.9	84.6	84.8
Yes	9.2	14.1	15.4	15.2

3.1.2 Embedding digital technologies (DTs) in teaching, learning and assessment

This section presents findings in relation to embedding digital technologies in teaching, learning and assessment and variation across school types according to DEIS status, enrolment size and gender composition. Digital technologies refer to electronic tools, systems, and devices that generate, store or process data. See Chapter 2, Section 2.2.2 for examples of digital technologies.

Respondents were asked to indicate their school's current level of practice on a 5-point scale (Emerging, Developing, Intermediate, Advanced, Highly advanced) in relation to embedding digital technologies in teaching, learning and assessment. The five response options have been collapsed to produce three categories for reporting (Emerging/Developing, Intermediate, Advanced/Highly advanced).

Differences emerged for this item in relation to DEIS status. DEIS Rural schools were more likely to indicate that they were emerging or developing their current level of practice in relation to embedding digital technologies compared with Urban Band 1 and 2 and non-DEIS schools (X^2 = 29.711; df=12; p<.005). Also, schools with smaller enrolment sizes (up to 130) were more likely to indicate that they were emerging or developing their current level of practice in relation to embedding digital technologies than schools with large enrolment sizes (X^2 = 38.02; df=12; p < .001) (see Table 3.15).

Table 3.15. Primary school respondents' ratings (percentages) of schools' current level of practice in relation to embedding digital technologies in teaching, learning and assessment, by DEIS status and enrolment size (n=1524)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
Emerging/Developing	56.5	41.0	49.4	65.3
Intermediate	37.3	46.2	39.2	25.3
Advanced/Highly advanced	6.2	12.8	11.4	9.3
Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
Emerging/Developing	61.9	60.6	55.9	45.6
Intermediate	32.0	34.3	37.1	43.7
Advanced/Highly advanced	6.0	5.1	7.0	10.7

Finally for this section, primary school respondents were asked to describe teachers' current *patterns* of embedding digital technologies into teaching, learning and assessment. Variation in responses by subgroups of either DEIS status, enrolment size or gender composition were compared. We found that variation in the patterns of teachers' usage of digital technologies was perceived to be highest among DEIS Urban Band 1 schools (X^2 = 16.384; df=6; p < .05) and schools with larger enrolment sizes (X^2 = 88.603; df=6; p < .001) (Table 3.16).

Table 3.16. Primary school respondents' ratings (percentages) of teachers' current patterns of embedding digital technologies in teaching, learning and assessment by DEIS status and enrolment size (n=1521)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
quite uniform	16.4	12.8	6.6	17.9
some variation	55.0	46.2	67.1	60.9
a lot of variation	28.5	41.0	26.3	21.2
Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
quite uniform	27.8	17.4	10.9	7.2
some variation	55.1	56.0	56.3	55.6
a lot of variation	17.1	26.6	32.8	37.2

3.1.3 Technical support

Primary school respondents indicated how technical support is provided in their schools. Significant differences were observed by DEIS status (see Table 3.17). Urban band 1 (76%) and Urban band 2 (71%) schools were more likely to indicate that technical support was delivered through a mixture of internal and external supports than non-DEIS (56%) and Rural DEIS schools (50%). Also, both non-DEIS (31%) and Rural DEIS schools (29%) were more likely to indicate that technical support was provided solely through external support compared with Urban Band 1 (13%) and Urban Band 2 schools (18%). Rural schools (15%) were most likely to indicate that they had no technical support at present (X^2 = 33.864; df=12; p<.001).

Differences were also observed by enrolment size (X^2 = 87.636; df=12; p<.001). Large (68%) and medium size schools (62%) were more likely to indicate that their technical support was delivered through a mixture of internal and external supports compared with small (52%) and very small schools (47%). Small (35%) and very small schools (32%) were most likely to indicate that they relied solely on external means of technical support compared with medium (24%) and large schools (24%). Very small schools (15%) and small schools (10%) were also most likely to indicate that they had no technical support at the time of responding to the survey (Table 3.17).

Table 3.17. Primary school respondents' ratings (percentages) of how technical support is provided in primary schools, by DEIS status and enrolment size (n=1484)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
all internal	5.7	6.7	8.2	6.1
all external	30.6	13.3	17.8	28.6
mixture of internal and external	55.8	76.0	71.2	50.3
no technical support at present	7.7	4.0	2.7	15.0
other	0.2	0.0	0.0	0.0
Enrolment Size	**very small up to 65**	**small 66 to 130**	**medium 131 to 250**	**large 251 or more**
all internal	5.9	3.4	8.5	5.9
all external	32.4	34.9	24.0	23.7
mixture of internal and external	46.9	51.8	62.1	68.2
no technical support at present	14.7	9.9	4.8	2.3
other	0.0	0.0	0.5	0.0

Respondents were also asked to rate the effectiveness of technical support in their school for four aspects of DT maintenance. The four aspects are: the effectiveness of technical support for maintaining connectivity, for keeping computing devices in good repair, for keeping devices up to date, and for keeping other devices (e.g. printers, projectors) in good repair. These were summed to form a scale with values ranging from 0 to 100 measuring perceived effectiveness of technical support (higher values indicating higher perceived effectiveness)[21]. The mean scores of primary schools within each DEIS, enrolment size and

[21] Cronbach's alpha ranges from .87 - .89 across primary, post-primary and special schools.

gender composition groups were compared. The results of these comparisons indicate that there were no significant differences across primary schools of varying gender composition.

However, there were significant variations across DEIS and enrolment size categories (Table 3.18). DEIS Rural schools had significantly lower perceived effectiveness of technical support (mean = 49.4) than non-DEIS, DEIS Urban Band 1 and Urban Band 2 schools (means 54.0, 58.7 and 62.4, respectively). Schools with a larger enrolment size (251 or more) had significantly higher perceived effectiveness of technical support (mean = 62.3) than medium, small and very small schools (means 55.9, 51.9, 47.35, respectively).

Table 3.18. Means on perceived effectiveness of technical support scale (0-100), by DEIS status and enrolment size: primary schools

Group: DEIS	**n**	**Mean**	**SD**	**LSD Comparisons**		
				Non DEIS	**Urban 1**	**Urban 2**
Non DEIS	1220	54.00	24.97			
Urban 1	78	58.66	22.18	ns		
Urban 2	79	62.41	23.02	<.05	ns	
Rural	150	49.39	26.43	<.01	<.001	<.001
Total	**1527**	**54.22**	**25.00**			
Group: Enrolment	**n**	**Mean**	**SD**	***LSD Comparisons***		
				Very small	**Small**	**Medium**
very small up to 65	382	47.35	24.72			
small 66 to 130	392	51.88	24.24	<.05		
medium 131 to 250	389	55.86	25.37	<.001	<.05	
large 251 or more	366	62.31	23.28	<.001	<.001	<.001
Total	**1529**	**54.22**	**25.00**			

Note: shaded cells indicate statistically significant differences between means, p<.001 to p<.05.

Finally, respondents were asked to indicate whether there was capacity or opportunity for their school to collaborate with neighbouring schools to improve technical support. No significant differences were observed for this item by enrolment size or gender composition. However, differences emerged in primary schools for this item by DEIS status (see Table 3.19). For example, Urban Band 1 schools (14.5%) were most likely to indicate that they already collaborate with neighbouring schools (X^2 = 18.578; df=9; p<.05).

Table 3.19. Primary school respondents' ratings (percentages) of whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support, by DEIS status (n=1495)

DEIS Status	**Non DEIS**	**Urban 1**	**Urban 2**	**Rural**
Yes, definitely - we already do this	4.1	14.5	5.2	4.7
Yes, we are currently exploring this as a possibility	6.7	5.3	7.8	5.4
Yes, although this has not been explored	48.4	47.4	44.2	47.3
No, this is unlikely	40.8	32.9	42.9	42.6

3.1.4 Ratings of digital technologies in primary schools

In this section, the variables 'Digital Technology (DT) Infrastructure and Connectivity' and 'Digital Technology (DT) Teacher and Pupil Engagement' are compared for primary schools across DEIS status, enrolment size and gender composition. See section 2.5.3 for a complete description of these scales.

There was a statistically significant difference on the DT infrastructure and connectivity scale for primary schools by DEIS status (Table 3.20):

- Urban Band 2 schools scored significantly higher than non-DEIS, Urban Band 1 and Rural DEIS schools.
- Rural DEIS schools scored significantly and substantially lower than the other groups.

There was also a statistically significant difference on the DT infrastructure and connectivity scale for primary schools for enrolment size (see again Table 3.20):

- Very small schools and small schools scored significantly lower on this scale than medium and large schools
- Large schools scored significantly higher on this scale than medium, small and very small schools.

There were no significant differences between the means of primary schools based on gender composition for the DT infrastructure and connectivity scale.

Table 3.20. Means on digital technology infrastructure and connectivity scale (0-100), by DEIS status and enrolment size: primary schools

Group: DEIS	**n**	**Mean**	**SD**	**LSD Comparisons**		
				Non DEIS	**Urban 1**	**Urban 2**
Non DEIS	1220	43.47	17.69			
Urban 1	78	46.17	20.46	ns		
Urban 2	79	53.31	16.56	<.001	<.05	
Rural	150	37.87	17.21	<.001	<.005	<.001
Total	**1527**	**43.57**	**17.96**			
Group: Enrolment	**n**	**Mean**	**SD**	**LSD Comparisons**		
				Very small	**Small**	**Medium**
very small up to 65	382	38.27	17.46			
small 66 to 130	392	39.95	16.26	ns		
medium 131 to 250	389	45.08	17.43	<.001	<.001	
large 251 or more	366	51.35	17.86	<.001	<.001	<.001
Total	**1529**	**43.57**	**17.96**			

Note: shaded cells indicate statistically significant differences between means, p<.001 to p<.05.

For the DT teacher and pupil engagement scale, there was a statistically significant difference for primary schools by enrolment size (Table 3.21): Large schools scored significantly higher on the DT teacher and pupil engagement scale than medium, small and very small schools.

Table 3.21. Means on digital technology teacher and pupil engagement (0-100) by enrolment size: primary schools

				LSD Comparisons		
Group: Enrolment	**n**	**Mean**	**SD**	**Very small**	**Small**	**Medium**
very small up to 65	382	43.01	18.22			
small 66 to 130	392	43.10	16.81	ns		
medium 131 to 250	389	42.96	16.87	ns	ns	
large 251 or more	366	46.27	17.35	<.05	<.05	<.01
Total	**1529**	**43.80**	**17.35**			

Note: shaded cells indicate statistically significant differences between means, p<.001 to p<.05.

There were no significant differences between the means of primary schools based on either DEIS status or gender composition for the DT teacher and pupil engagement scale.

3.2 Special schools

Key variations across sub-groups of special schools are described in this section in relation to the following headings: Implementation of the DLF; Embedding digital technologies in teaching learning, and assessment; and Technical support. The sub-group of interest with respect to special schools is enrolment size. It should be noted that the total number of special schools in the sample (n=64) is quite small.

3.2.1 Implementing the DLF

Respondents were asked to indicate whether they had commenced the development of a Digital Learning Plan(DLP) informed by the DLF .Respondents were also asked to what extent the DLP does or will feature in the school's overall School Planning Processes over the 2018-2019 school year. There were no significant differences across special schools of varying enrolment size on responses to either of these items.

Respondents were asked about the likelihood of using 10 different strategies to promote the implementation of the DLF among teaching staff in the school. No significant differences emerged for special schools for any of these strategies in relation to enrolment size.

In relation to the Digital Learning Plan (DLP), respondents were requested to select from a list of 14 categories their schools' top five priorities for the implementation of the plan. A significant difference emerged for just one area of priority, i.e. enhancing the use of digital technologies in certain subject areas. This was significantly more likely among very small schools (47%) than small (7%), medium (15%) and large schools (15%) (X^2 = 8.6; df=3; p<.05).

3.2.2 Embedding digital technologies (DTs) in teaching, learning and assessment

This section is in relation to embedding digital technologies in teaching, learning and assessment and variation across special schools according to enrolment size. Digital technologies refer to electronic tools, systems, and devices that generate, store or process data. See section 2.2.2 for examples of digital technologies.

For the first item, respondents were asked to indicate on a 5-point scale (Emerging, Developing, Intermediate, Advanced, Highly advanced) their current level of practice in relation to embedding digital technologies in teaching, learning and assessment. No significant differences were found between special schools of varying enrolment size.

Respondents were also asked to describe teachers' current patterns of embedding digital technologies into teaching, learning and assessment. Differences emerged for enrolment size for this item (Table 3.22). Very small schools were most likely to indicate that teachers' current patterns were quite uniform and least likely to indicate that there was a lot of variation in teachers' patterns of usage, compared to schools with larger enrolment sizes (X^2 = 15.0; df=6; p< .05).

Table 3.22. Special school respondents' ratings (percentages) of teachers' current patterns of embedding digital technologies in teaching, learning and assessment, by enrolment size (n=64)

Enrolment Size	**v small up to 25**	**small 26 to 50**	**medium 51 to 75**	**large 76 or more**
quite uniform	40.0	0.0	14.3	15.0
some variation	53.3	33.3	35.7	40.0
a lot of variation	6.7	66.7	50.0	45.0

3.2.3 Technical support

Across the three items of interest for sub-group analysis in relation to technical support (how technical support is provided in the school; perceived effectiveness of technical support in the school; whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support), no significant differences emerged for special schools in relation to enrolment size.

3.2.4 Ratings of digital technologies in special schools

The scales 'Digital Technology (DT) Infrastructure and Connectivity' and 'Digital Technology (DT) Teacher and Pupil Engagement' were compared for special schools across enrolment size, and no significant subgroup differences were observed. See Section 2.5.3 for a complete description of these scales.

3.3 Post-primary schools

Key variations across sub-groups of post-primary schools are described in this section in relation to the following headings: Implementation of the DLF; Embedding digital technologies in teaching learning, and assessment; and Technical support. Sub-groups of interest are DEIS status, enrolment size, and sector and gender composition.

3.3.1 Implementing the DLF

The first item on implementing the DLF asked whether post-primary schools had commenced the development of a Digital Learning Plan. Results indicate that there was no significant difference across post-primary schools on this item by DEIS status, enrolment size, or sector and gender composition.

There were, however, significant differences by DEIS status in the extent to which the Digital Learning Plan does or will feature in post-primary schools' overall School Planning Processes over the 2018-2019 school year (X^2 = 8.41; df=3; p< .05). DEIS schools were less likely than non-DEIS schools to indicate that the DLP would feature in their planning process (see Table 3.23). No significant differences were observed in post-primary schools by enrolment size or by sector and gender composition.

Table 3.23. The extent to which the school's Digital Learning Plan does or will feature in the school's overall School Planning Processes over the 2018-19 school year by DEIS status for post-primary schools (n=317)

DEIS Status	**Non-DEIS**	**DEIS**
To a large extent	21.5	14.6
To a moderate extent	47.4	37.1
to a small extent	24.6	37.1
to a very small extent or not at all	6.6	11.2

Respondents were asked to select from a list of 14 categories their schools' top five priorities for the implementation of the Digital Learning Plan. The majority of items for this question showed no variation across post-primary schools either by DEIS status, enrolment size, or by sector and gender composition. Just two items showed a significant difference by sub-group for post-primary schools:

- Small schools (29%) were significantly more likely than medium (14%) or large schools (19%) to select enhancing the use of digital technologies in certain subject areas as one of their top five priorities for implementing the Digital Learning Plan (X^2 = 7.55; df=2; p<0.05) (while there were no significant differences for this item by DEIS status or sector and gender composition).
- ETB schools (55%) were significantly more likely than secondary boys (25%), secondary girls (41%), secondary mixed (43%) and community comprehensives (42%) to select using digital technologies to improve learning outcomes as one of their top five priorities for implementing the Digital Learning Plan (X^2 = 11.17; df=4; p < .05). No significant differences were observed for this item by DEIS status or enrolment size.

Respondents were then asked about the likelihood of 10 different strategies to promote the implementation of the DLF among teaching staff in the school. These strategies are described in terms of sub-group differences by DEIS status, enrolment size and sector and gender composition. Strategies were rated on a 5-point scale and have been collapsed to produce three categories for reporting (Definitely yes/Likely, Unsure, Unlikely/Definitely No). Sub-group differences emerged for just three strategies:

- Dedicated time allocated to DLF during staff meetings: Secondary mixed schools (85%) were significantly more likely to indicate that they definitely would or were likely to use this strategy compared with community/comprehensive (66%), ETB (77%), secondary girls (76%) and secondary boys schools (74%) (X^2 = 27.25; df=16; p< .05).
- Mentoring (e.g. digital champions in the school provide support to other school staff): Differences emerged by both DEIS status (X^2 = 8.66; df=3; p< .05) and by

sector and gender composition (X^2 = 25.92; df=12; p<.05). Non-DEIS schools (81.5%) were more likely to select this strategy than DEIS schools (73%), while community/comprehensive schools (87%) were more likely to select this strategy than schools in the other sector/gender composition groups (66-83%).

- Liaising or collaborating with other local post-primary school(s) varied significantly by both DEIS status (X^2 = 19.04; df=4; p=.001) and by enrolment size (X^2 = 17.6; df=8; p<.05). DEIS schools (35%) were significantly more likely than non-DEIS schools (21%) to indicate that they definitely would or were likely to use liaising with other local schools as a strategy to promote the implementation of the DLF, while small schools (33%) were significantly more likely than medium (21%) or large schools (21%) to indicate that they definitely would or were likely to use this strategy.

3.3.2 Embedding digital technologies (DTs) in teaching, learning and assessment

In the survey, Digital Technologies (DTs) were defined as electronic tools, systems and devices that generate, store or process data. These include computers, tablets, software and applications, websites, social media, multimedia, online games, robotics, cloud computing, and mobile devices.

Respondents were asked to indicate on a 5-point scale (Emerging, Developing, Intermediate, Advanced, Highly advanced) their current level of practice in relation to embedding DTs in teaching, learning and assessment. The five response options have been collapsed to produce three categories for reporting (Emerging/Developing, Intermediate, Advanced/Highly advanced).

A significant difference was observed across post-primary schools for this item by sector and gender composition (X^2 = 38.61; df=16; p=.001). Secondary boys and secondary mixed schools were significantly more likely to indicate that they were emerging or developing with respect to embedding DTs than secondary girls, ETB, and community/comprehensive schools. ETB schools were significantly more likely to indicate that they were advanced or highly advanced compared to the other school types (see Table 3.24).

Table 3.24. Post-primary school respondents' ratings (percentages) of schools' current level of practice in embedding digital technologies in teaching, learning and assessment, by sector and gender composition (n=322)

School Type/Gender	**sec boys**	**sec girls**	**sec mixed**	**ETB**	**Comm/comp**
Emerging/Developing	47.7	41.4	47.8	34.5	44.2
Intermediate	52.3	51.7	46.3	40.0	39.5
Advanced/Highly advanced	0.0	6.9	6.0	25.5	16.3

There were no significant differences across DEIS status, enrolment size, or sector and gender composition in terms of perceived variations in teachers' current patterns of embedding digital technologies into teaching, learning and assessment.

3.3.3 Technical support

Respondents were asked to indicate how technical support is provided in their schools, one of either: all internal, all external, a mixture of internal and external support, or no technical support at present. No sub-group significant differences were observed across post-primary schools in their technical support either by DEIS status, enrolment size, or sector and gender composition.

Respondents were also asked to rate the effectiveness of technical support in their school for four aspects of DT maintenance - the effectiveness of technical support: for keeping computing devices in good repair; for keeping devices up to date with software, virus scans, etc; for keeping other devices (e.g. printers, projectors) in good repair; for maintaining connectivity. These were combined to create a scale measuring perceived effectiveness of technical support (see Section 3.1.3). Scores range from 0-100 with higher scores indicating higher perceived effectiveness.

Comparisons of mean scores on this scale by DEIS status, enrolment size and sector/gender composition indicates that there are significant differences on all three sub-groups (Table 3.25). Community/comprehensive schools had significantly higher scores on this scale than ETB and secondary mixed schools; schools with large enrolment sizes had significantly higher means than schools with small enrolments; and non-DEIS schools had significantly higher scores than DEIS schools.

Table 3.25. Means on perceived effectiveness of technical support scale (0-100), by sector and gender composition, enrolment size and DEIS status: post- primary schools

Group: Sector/Gender	**n**	**Mean**	**SD**	***LSD Comparisons***			
				sec boys	**sec girls**	**sec mixed**	**etb**
sec boys	44	69.50	21.10				
sec girls	59	68.30	23.71	ns			
sec mixed	67	63.47	21.79	ns	ns		
ETB	111	66.03	21.65	ns	ns	ns	
comm/comp	43	76.94	22.92	ns	ns	<.05	<.05
Group: Enrolment	**n**	**Mean**	**SD**	***LSD Comparisons***			
				small	**medium**		
Small	105	63.57	21.95				
Medium	98	67.27	22.42	ns			
Large	104	72.54	22.13	<.05	ns		
Group: DEIS	**n**	**Mean**	**SD**	***LSD Comparisons***			
				non-DEIS			
Non DEIS	225	69.64	20.86				
DEIS	82	62.73	25.66	<.05			
Total	**324**	**67.80**	**22.40**				

Respondents were asked to indicate whether there is capacity or opportunity for their school to collaborate with neighbouring schools to improve technical support. Significant differences were observed by sector and gender composition, but not by DEIS status or enrolment size (see Table 3.26). ETB schools were most likely to indicate that they already

collaborate with neighbouring schools, when compared with other school types (X^2 = 44.74; df=12; p< .001).

Table 3.26. Post-primary school respondents' ratings of whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support, by sector and gender composition (n=312)

School sector/gender	sec boys	sec girls	sec mixed	ETB	Comm/comp
Yes, definitely - we already do this	2.4	8.8	3.1	26.2	11.6
Yes, we are currently exploring this as a possibility	14.6	5.3	7.8	13.1	9.3
Yes, although this has not been explored	48.8	43.9	45.3	15.9	32.6
No, this is unlikely	34.1	42.1	43.8	44.9	46.5

3.3.4 Ratings of digital technologies in post-primary schools

This section presents the results of the analyses of subgroups of post-primary schools for the two variables 'Digital Technology (DT) Infrastructure and Connectivity' and 'Digital Technology (DT) Teacher and Pupil Engagement'. Subgroups of interest are DEIS status, enrolment size, and sector and gender composition. See section 2.5.3 for a complete description of these scales.

There was a statistically significant difference on the DT infrastructure and connectivity scale for post-primary schools by sector and gender composition status. ETB schools scored significantly higher on the DT infrastructure and connectivity scale than secondary girls and secondary mixed schools. Although ETB schools scored higher on the DT infrastructure and connectivity scale than secondary boys and community comprehensive schools, these differences were not statistically significant (see Table 3.27).

Table 3.27. Means on DT infrastructure and connectivity scale (0-100), by sector and gender composition: post- primary schools

				LSD Comparisons			
	n	**Mean**	**SD**	**sec boys**	**sec girls**	**sec mixed**	**etb**
sec boys	44	50.41	15.42				
sec girls	59	49.45	17.39	ns			
sec mixed	67	47.87	17.92	ns	ns		
etb	111	56.32	18.74	ns	<.05	<.005	
commcomp	43	51.21	18.70	ns	ns	ns	ns
Total	**324**	**51.84**	**18.12**				

Note: shaded cells indicate statistically significant differences between means, p<.05 to p<.001.

There were no significant differences between the means of post-primary schools based on DEIS status or enrolment size for the DT infrastructure and connectivity scale.

Furthermore, there were no significant differences between the means of primary schools based on either DEIS status, enrolment size or sector and gender composition for the DT teacher and pupil engagement scale.

3.4 Key variations across schools

In this chapter, comparisons were made as follows:

- Primary schools with varying enrolment sizes, DEIS status and gender composition
- Special schools with varying enrolment sizes
- Post-primary schools with varying enrolment size, DEIS status and sector/gender composition.

The aim of these comparisons was to provide insights into variations in schools' plans and needs in relation to the implementation of the DLF.

Comparisons were made under four themes, i.e. Implementing the DLF; Embedding digital technologies in teaching, learning and assessment; Technical support; and Ratings of digital technologies. Main findings are summarised under each of the four themes, focusing on findings where statistically significant differences emerged.

There was very little variation across special schools of varying enrolment sizes in any of these areas, so the focus of this section is on primary and post-primary schools only.

3.4.1 Implementing the DLF

Primary schools with larger enrolment sizes were more likely to have begun development of their Digital Learning Plans than smaller primary schools. Indeed, most of the variations in DLF implementation that were statistically significant relate to school size. For example, team teaching and mentoring were implementation strategies that were significantly more likely in schools with the largest enrolment sizes (i.e. 251 pupils or more). Some variations by DEIS status also emerged. For example, DEIS Urban Band 1 and Urban Band 2 schools were significantly more likely to indicate that mentoring was a likely implementation strategy than non-DEIS and Rural DEIS schools.

Primary schools also varied, mainly by enrolment size, but also by DEIS status, in terms of the areas that they planned to prioritise in their school's Digital Learning Plans. For example, developing class-specific or subject-specific approaches were significantly more likely to be prioritised among schools with smaller enrolment sizes (i.e. 65 or fewer pupils) than those with larger enrolments. On the other hand, larger primary schools were significantly more likely to prioritise improving the sharing of documents and resources than smaller schools. Comparing priorities across DEIS and non-DEIS schools, we observed that DEIS Rural schools were significantly more likely than non-DEIS, Urban Band 1 and Urban Band 2 schools to prioritise the assessment of learning. Also, making improvements to the sharing of teaching documents or resources was significantly more likely to be prioritised among DEIS Urban Band 1 and Band 2 schools than in non-DEIS and DEIS Rural schools.

At post-primary level, DEIS schools reported that they were less likely to integrate their Digital Learning Plans with the school's overall Planning Processes than non-DEIS schools. This is likely to be related to the slightly different planning processes in place in DEIS and non-DEIS schools.

Also, post-primary schools varied somewhat in terms of their Digital Learning Plan priorities; for example, small schools were significantly more likely than medium or large schools to select enhancing the use of digital technologies in certain subject areas as one of their top five priorities. However, these differences were not substantial, and smaller than the variations observed at primary level.

In terms of the likelihood of implementing different strategies to support DLF implementation, post-primary schools were more similar than different to one another in this regard. However, mentoring was rated as more likely in community/comprehensive and non-DEIS schools, while liaising or collaborating with other post-primary schools was rated as more likely among DEIS schools and schools with smaller enrolment sizes.

3.4.2 Embedding digital technologies (DTs) in teaching, learning and assessment

Respondents indicated their school's current level of practice on a 5-point scale (Emerging, Developing, Intermediate, Advanced, Highly advanced) in relation to embedding digital technologies in teaching, learning and assessment.

In primary schools, those most likely to rate themselves as emerging or developing were schools with smaller enrolment sizes, non-DEIS and Rural DEIS schools.

At post-primary level, secondary boys and secondary mixed schools were significantly more likely to indicate that they were emerging or developing with respect to embedding DTs than secondary girls, ETB, and community/comprehensive schools. ETB schools were significantly more likely to indicate that they were advanced or highly advanced compared to the other school types.

3.4.3 Technical support

Schools indicated whether or not technical support was provided internally, externally, a mixture of internally and externally, or not in place at the time of the survey.

We found that, at primary level, Urban band 1 and Urban band 2 schools were more likely to indicate that technical support was delivered through a mixture of internal and external supports than non-DEIS and Rural DEIS schools; non-DEIS and DEIS Rural schools more frequently relied on technical support that was provided externally; and 15% of DEIS Rural schools had no technical support (compared with 3-8% of other school types). Similarly, 15% of small schools (with enrolments of up to 65 pupils) had no technical support in place (compared with 2-10% of larger schools). Also, larger schools were more likely to have a mixture of internal and external technical support in place, while smaller schools were more likely to have external-only technical support.

The perceived effectiveness of technical support was highest in DEIS Urban Band 1 and 2 schools and in schools with large enrolment sizes (251 pupils or more). These differences are statistically significant.

Asked whether there is capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support, this was most likely to be in place or in the process of being explored in DEIS Urban Band 1 schools relative to Urban Band 2, DEIS Rural and non-DEIS schools.

At post-primary level, there were no differences across schools by enrolment size, DEIS status or sector/gender composition in terms of how technical support was provided (internal, external, a mixture). However, the perceived effectiveness of technical support varied significantly, being highest among community/comprehensive schools, non-DEIS schools, and schools with large enrolments. Also, capacity or opportunity for the school to collaborate with neighbouring schools to improve technical support was significantly more likely to already be in place or being explored as a possibility among ETB schools relative to secondary and community/comprehensive schools.

3.4.4 Ratings of digital technologies

At primary level, DEIS Rural schools had a mean score on a digital technology infrastructure and connectivity scale that was substantially and significantly lower than that of non-DEIS, DEIS Urban Band 1 and Urban Band 2 schools, while Urban Band 2 schools had the highest mean score on this measure. Higher scores on this scale indicate a higher rating by schools for their levels of digital technology infrastructure and connectivity within the school. Similarly, schools with medium and large enrolment sizes had a mean digital technology infrastructure and connectivity score that was significantly higher than those in schools with very small and small enrolment sizes.

At post-primary level, ETB schools had a mean score on the digital technology infrastructure and connectivity scale that was significantly higher than the mean score in mixed secondary school types. This indicates that ETB staff rated their schools' digital technology and infrastructure as being significantly higher (better) than staff in mixed secondary schools. Post-primary schools did not vary by DEIS status or enrolment size on this measure.

Chapter 4 : Insights from the PDST Technology in Education seminars and focus groups

This chapter describes results from two sources in addition to the ERC baseline survey results described in Chapters 2 and 3. The first source comes from a feedback survey designed and administered by the PDST Technology in Education (TiE) team to seminar participants. The second source is a summary of the main themes that were identified in a thematic analysis of two focus groups with PDST Technology in Education primary and post-primary teams. Section 4.1 describes the respondents who provided information for each of these sources; Section 4.2 describes the key findings from the PDST Technology in Education seminar feedback survey; Section 4.3 summarises the key themes emerging from the focus group interview transcripts. In Section 4.4, we summarise the key findings. Chapter 5 considers how the findings in this chapter link with those identified in Chapters 2 and 3.

4.1 Respondents

4.1.1 PDST Technology in Education seminar feedback survey

As noted in Chapter 1, 3,218 responses to the PDST Technology in Education seminar survey were received (2,720 primary and special schools, and 498 post-primary schools). Seminars ran from October 2018 to April 2019. Responses are not identified by roll number and (as noted in Chapter 2), in many cases, more than one respondent per school completed a seminar feedback survey. In Section 4.2, we use 'primary schools' to refer to both primary and special schools; it is not possible to distinguish between these two categories of school in the data.

4.1.2 Focus groups with PDST Technology in Education

Two researchers from the ERC conducted two focus groups with PDST advisors in May and June of 2019. Four post-primary PDST advisors attended the focus group in May, and five primary advisors attended the June focus group.

Interviews were recorded with the permission of the participants and subsequently transcribed verbatim. Participants were advised to refrain from mentioning names of individual schools or individuals during the interview, to protect anonymity. If mentioned, names of schools, persons and places were retracted in the interview transcripts to protect the anonymity of participants. The audio files were deleted on completion and checking of the transcripts. The May 2019 focus group lasted 1 hour 49 minutes while the June one lasted 1 hour 43 minutes.

4.2 Results of the PDST Technology in Education seminar feedback survey

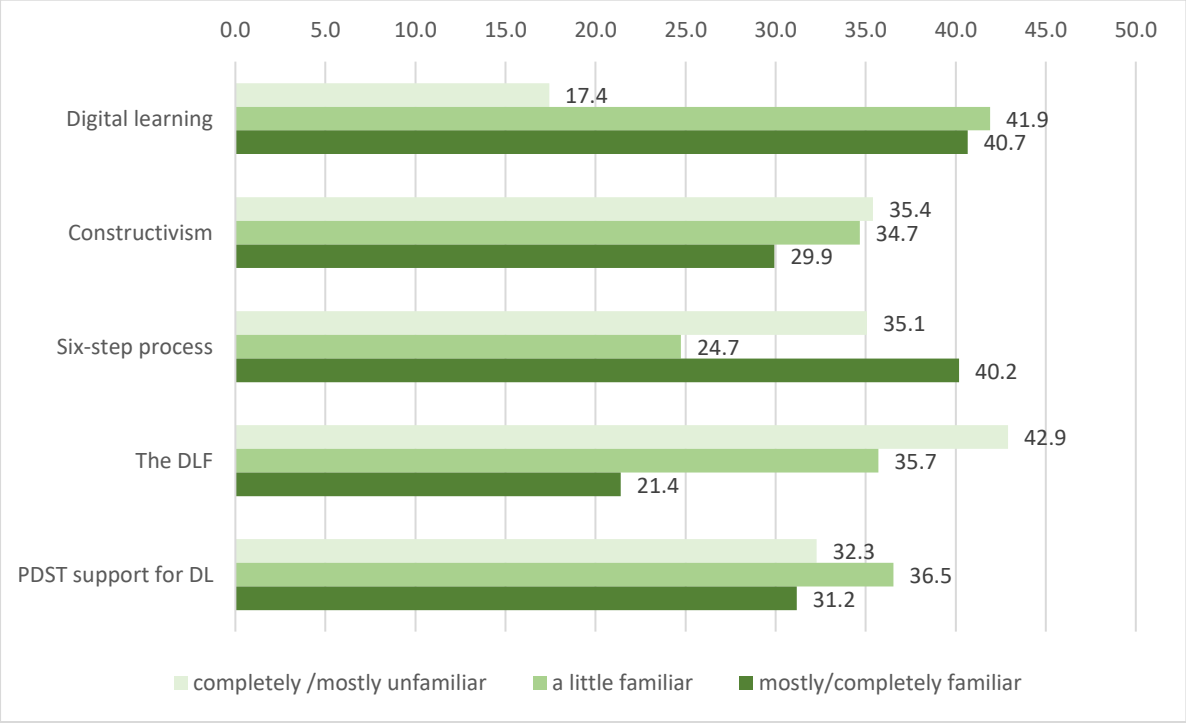
The results are presented in three sub-sections: Participants' prior ratings of knowledge about the DLF and related topics prior to attending the seminar; Ratings of knowledge about and confidence in implementing the DLF and related topics after attending the seminar; and Views on the seminar.

4.2.1 Ratings of knowledge prior to the seminar

Respondents were asked to rate their level of prior knowledge of and familiarity with digital learning; constructivism; the six-step process; the DLF; and PDST supports for digital learning. Responses[22] for primary schools are shown in Figure 4.1 while responses for post-primary schools are shown in Figure 4.2.

At primary level, respondents expressed highest levels of familiarity with digital learning (41% indicated that they were mostly or completely familiar with this) and the six-step planning process (40%). Somewhat lower levels of familiarity were expressed about constructivism (30% indicated that they were mostly or completely familiar with this) and PDST support for digital learning (31%). Just 21% of primary school respondents indicated that they were mostly or completely familiar with the DLF, while 43% were completely or mostly unfamiliar with the DLF. Across all five items there is substantial variation. For example, roughly one-third of responses at primary level fell into each of the three categories (Mostly/Completely unfamiliar, A little familiar, and Mostly/Completely familiar) when asked about their familiarity with the DLF.

Figure 4.1. Primary school respondents' ratings (percentages) of their prior knowledge and understanding of digital learning; constructivism; the six-step process; the DLF; and PDST supports for digital learning



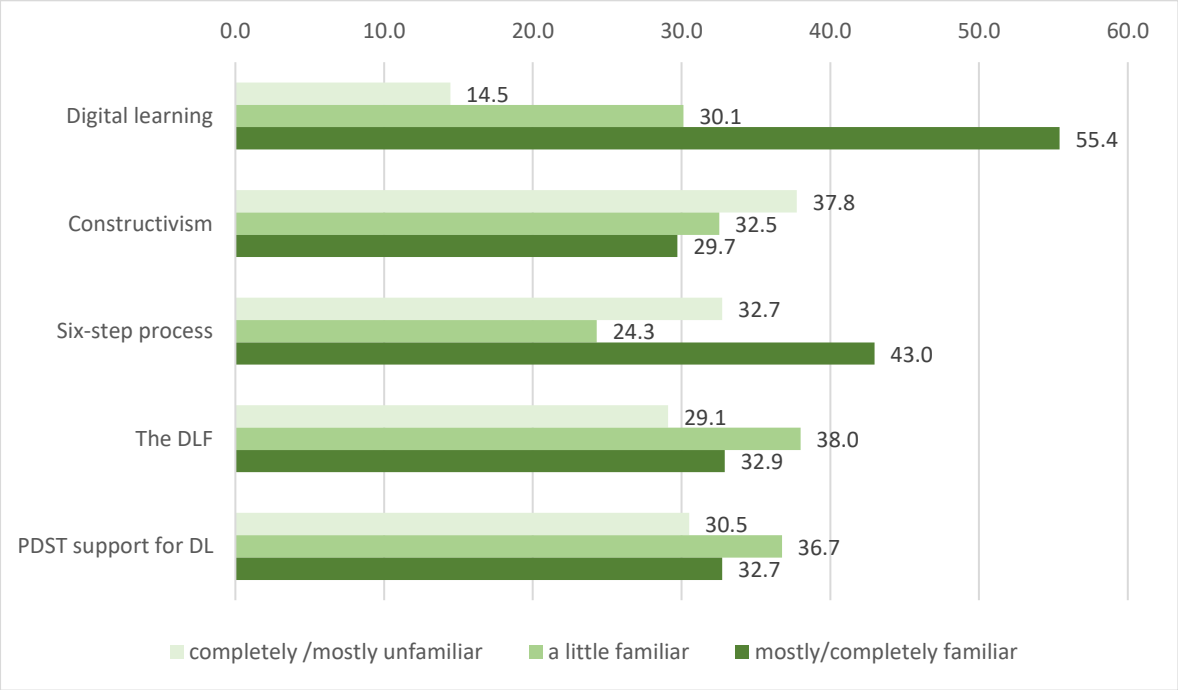
At post-primary level, across the five items, respondents indicated the highest level of familiarity with digital learning (55% indicated that they were mostly or completely familiar with this); and 43% indicated that they were mostly or completely familiar with the six-step planning process. Between 30% and 33% indicated that they were mostly or completely familiar with the other three items (constructivism; the DLF; and PDST support for digital

[22] Unless otherwise stated, there are 2,720 respondents at primary level (including special schools) and 498 at post-primary level.

learning). Similar to primary level respondents, post-primary respondents varied in their reported level of familiarity with these five items. For example, while 33% were mostly or completely familiar with the DLF, 38% were a little familiar with it, and 29% were mostly or completely unfamiliar with it.

Chi-square tests of the ratings on these five items across primary and post-primary level respondents were carried out. Significant differences emerged in two of these five comparisons. Post-primary respondents were significantly more likely to rate themselves as mostly or completely familiar with digital learning ($\chi^2 = 38.983$; df = 4; $p < .001$) and also with the DLF ($\chi^2 = 59.398$; df = 4; $p < .001$). Ratings of familiarity on the other three items (constructivism, the six-step process, and PDST support for digital learning) did not differ significantly across primary and post-primary level respondents.

Figure 4.2. Post-primary school respondents' ratings (percentages) of their prior knowledge and understanding of digital learning; constructivism; the six-step process; the DLF; and PDST supports for digital learning



4.2.2 Ratings of knowledge and confidence after attending the seminar

Figures 4.3 and 4.4 display primary and post-primary respondents' ratings of their level of familiarity with the same five items as shown in Figures 4.1 and 4.2 *after* having attended the seminar. The results indicate a substantial increase in the levels of familiarity on all five items at both primary and post-primary levels. Between 77% and 89% of respondents rated themselves as mostly or completely familiar with the five items at primary level (Figure 4.3) and between 80% and 92% rated themselves as mostly or completely familiar with these five items at post-primary level (Figure 4.4).

Chi-square tests of the ratings on these five items across primary and post-primary level respondents were computed. A small but significant difference emerged in one of these five comparisons. Post-primary respondents were significantly more likely to rate themselves as

mostly or completely familiar with digital learning ($\chi^2 = 9.920$; df = 4; p = .042). Ratings of post-seminar familiarity on the other three items (constructivism, the six-step process, the DLF, and PDST support for digital learning) did not differ significantly across primary and post-primary levels.

Figure 4.3. Primary school respondents' ratings (percentages) of their knowledge and understanding of digital learning; constructivism; the six-step process; the DLF; and PDST supports for digital learning after attending the PDST Technology in Education seminar

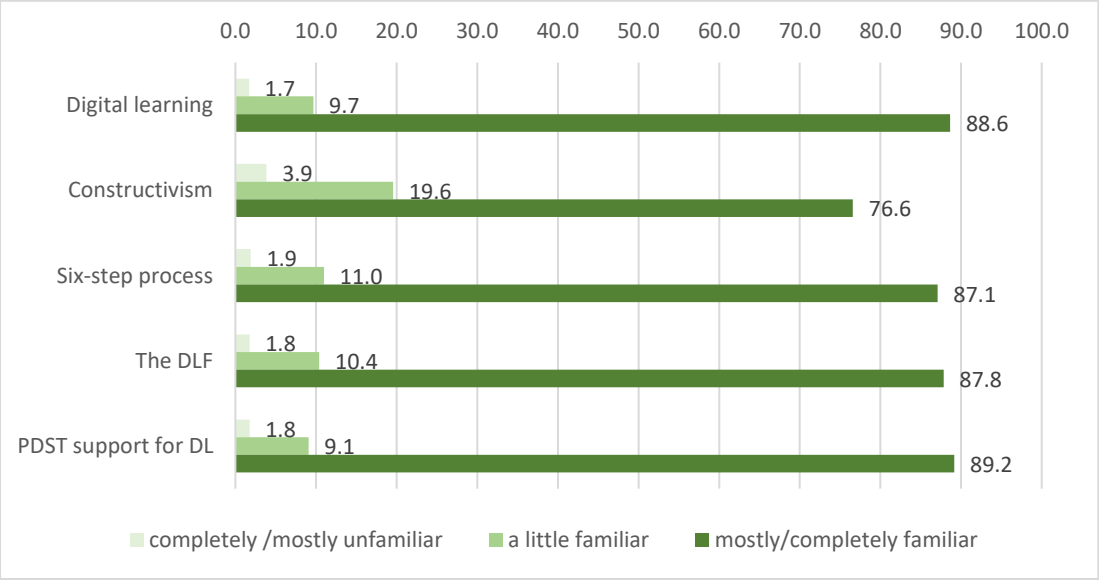
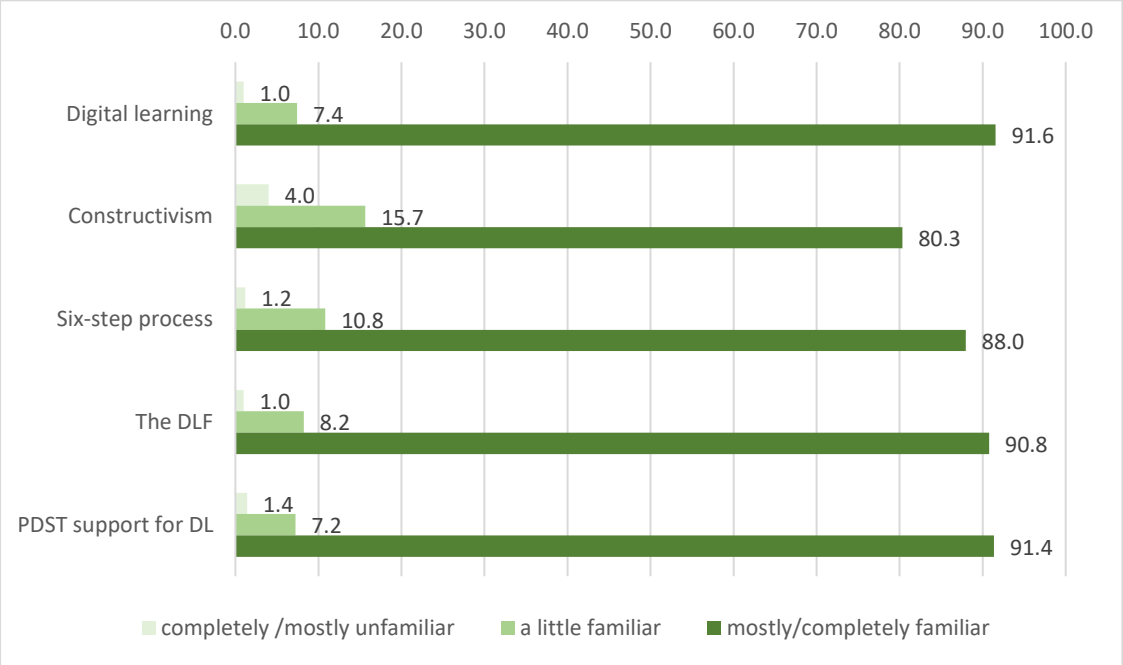


Figure 4.4. Post-primary school respondents' ratings (percentages) of their knowledge and understanding of digital learning; constructivism; the six-step process; the DLF; and PDST supports for digital learning after attending the PDST Technology in Education seminar



We can also compare pre- and post-seminar ratings across individuals. Table 4.1 shows the percentages of respondents at primary (and special school) and post-primary school levels

whose reported level of familiarity with each of these five items increased, based on their ratings prior to and after attending the seminar. The first and third rows show the percentages for *all* respondents, while the second and fourth rows show the percentages on each item for those respondents whose prior level of familiarity was completely/mostly unfamiliar or a little familiar. This second comparison was done because participants whose prior knowledge was already high (Mostly or Completely familiar) could not have reported much, if any, increase in familiarity.

At primary level, between 67% and 80% of all respondents reported an increase in familiarity on these five items, and, of those reporting lower levels of prior familiarity, between 78% and 95% reported increases.

Similarly, at post-primary level, between 60% and 80% of all respondents reported an increase in familiarity on these five items, and, of those reporting lower levels of prior familiarity, between 71% and 95% reported increases.

At both primary and post-primary levels, ratings on familiarity with digital learning showed somewhat less of an increase before and after the seminar among participants with lower prior levels of familiarity than the other items. For example, 78% of primary level participants with lower levels of prior familiarity indicated an increase in level of familiarity with digital learning, while the corresponding percentage for the increase in familiarity with the DLF was 95%. At post-primary levels, the equivalent figures are 71% and 95%, respectively.

Table 4.1. Percentages of respondents reporting increases in levels of familiarity with digital learning; constructivism; the six-step process; the DLF; and PDST supports for digital learning after attending the PDST Technology in Education seminar: all respondents, and respondents reporting lower levels of prior familiarity

Primary	*Digital learning*	*Constructivism*	*Six-step process*	*The DLF*	*PDST support for DL*
All respondents	68.2	70.3	66.8	80.3	76.8
Respondents rating their prior knowledge as completely/mostly unfamiliar or a little familiar	77.7	90.8	92.6	95.1	94.1
Post-primary					
All respondents	59.8	73.5	66.7	79.5	79.9
Respondents rating their prior knowledge as completely/mostly unfamiliar or a little familiar	71.0	91.9	94.0	94.9	94.6

Participants also rated their levels of confidence on seven of the steps or processes involved in implementing the DLF in their schools (establishing a Digital Learning team; creating a Digital Learning Vision; beginning the six-step planning process; gathering and evaluating data; writing a Digital Learning plan; monitoring and evaluating a DL plan; and using PDST supports for digital learning). Figure 4.5 shows these ratings for primary (and special school) respondents, while Figure 4.6 shows the ratings at post-primary level.

At both primary and post-primary levels, levels of confidence were high for a large majority of respondents. At primary level, between 76% and 83% indicated that they were almost

completely or completely confident in these seven processes (Figure 4.5), while between 77% and 88% of post-primary respondents rated themselves as almost completely or completely confident on these seven items (Figure 4.6).

Figure 4.5. Primary school respondents' ratings (percentages) of their levels of confidence in seven steps or processes in implementing the DLF in their schools

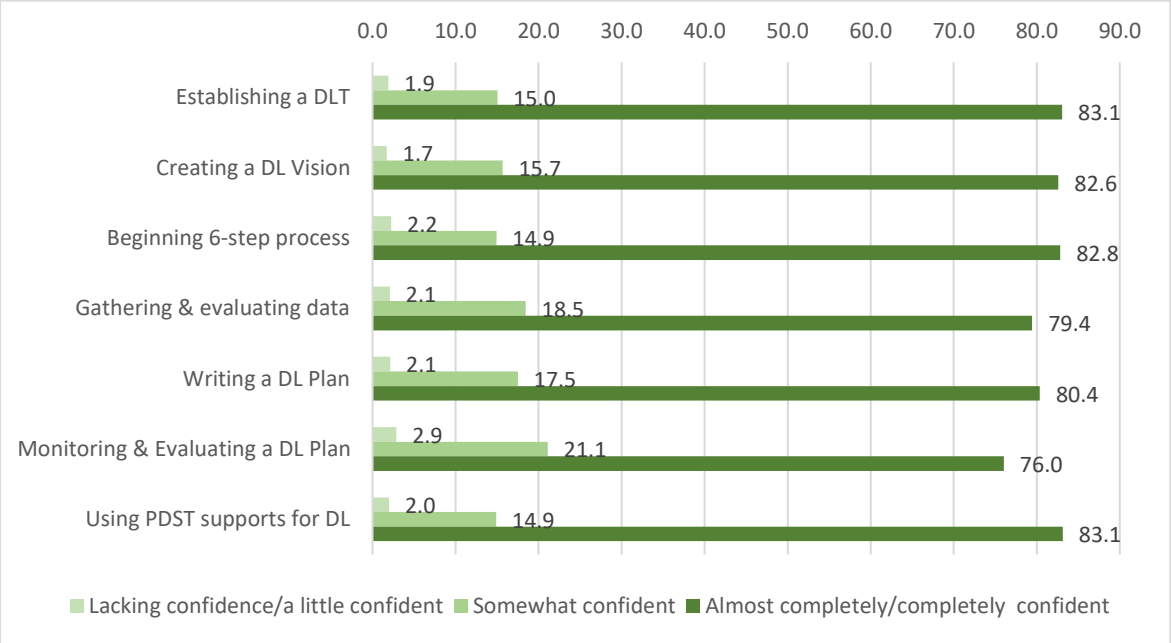
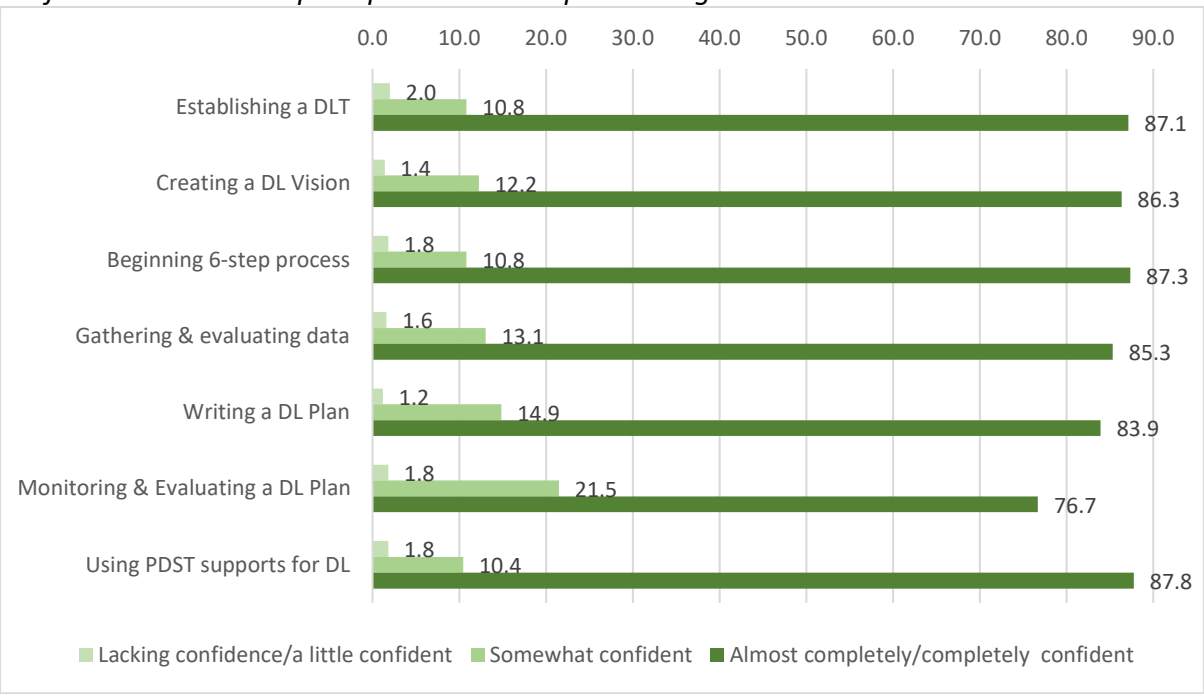


Figure 4.6. Post-primary school respondents' ratings (percentages) of their levels of confidence in seven steps or processes in implementing the DLF in their schools



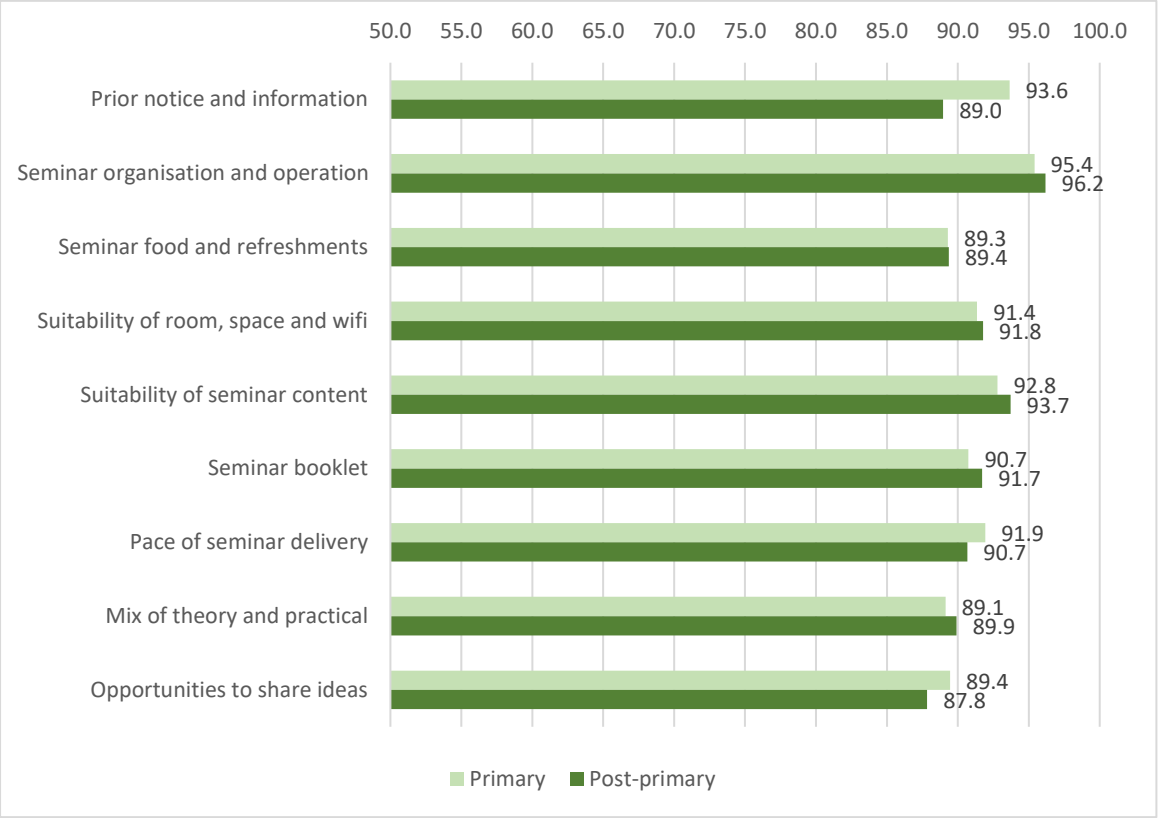
Chi-square tests of the ratings on these seven items were conducted, comparing primary and post-primary level respondents. Significant differences emerged in three of these seven comparisons. Post-primary respondents were slightly but significantly more likely to rate

themselves as more confident than primary respondents in establishing a DL team (χ^2 = 9.962; df = 4; p = .041) and with beginning the six-step planning process (χ^2 =10.782; df = 4; p = .029). Post-primary school respondents also reported significantly higher levels of confidence in gathering and evaluating data (χ^2 = 14.802; df = 4; p = .005). Ratings on the other four items did not differ significantly across primary and post-primary school respondents (creating a DL vision, writing a DL Plan, monitoring and evaluation a DL plan, and using PDST supports for DL).

4.2.3 Participants' views on the seminars

Figure 4.7 shows the percentages of primary (and special school) and post-primary respondents rating various aspects of the seminar as very good / excellent. The ratings show a very high level of satisfaction with all aspects of the seminar that were asked about: at primary level, ratings ranged from 89% to 95% and at post-primary these ranged from 88% to 96%.

Figure 4.7. Percentages of primary and post-primary respondents rating various aspects of the PDST Technology in Education DLF seminar as very good/excellent



Chi-square tests between the ratings shown in Figure 4.7 were conducted. Statistically significant differences in the ratings (Poor, Fairly good, Good, Very good, Excellent) were found between primary and post-primary level respondents on four of the 10 items. In all four cases, ratings were higher (more positive) at primary compared with post-primary levels. The largest difference concerned seminar notice and prior information. For the other three items, differences between primary and post-primary levels on the ratings, though statistically significant, were not large:

- Seminar notice and prior information (χ^2 =25.101; df = 4; p < .001).

- Suitability of content ($\chi^2 = 10.616$; df = 4; p = .031).
- Pace of delivery ($\chi^2 = 11.686$; df = 4; p = .020).
- Mix between theory and practical ($\chi^2 = 9.962$; df = 4; p = .041).

A number of items in the PDST seminar questionnaire sought text responses from seminar participants. Each item underwent coding and was subject to a content analysis. The content analysis captured both the tone of the comment (positive, negative), and its thematic content.

Table 4.2 shows the number of comments made within each question, the number of instances of discrete themes, the percentage of respondents making a comment, and the number of discrete themes per comment. The percentages of respondents making a text comment varied quite a lot depending on the question asked. About one in seven respondents commented on the overall seminar and on the overall experience, while roughly one in four offered suggestions for improvement and/or made other comments. It is noteworthy that about three-quarters of respondents commented on the most helpful aspects of the seminar, and the analysis of these responses (below) confirms the positive ratings shown in Figure 4.7.

Table 4.2. Number of comments and instances of discrete themes for text responses, the percentage of respondents making a comment, and the number of discrete themes per comment, primary (n=2720) and post-primary schools (n=498)

Primary and special	Number of comments	Number of instances of discrete themes	% of respondents making a comment	Number of discrete themes per comment
Q1 (rating: overall seminar)	385	477	14.0	1.24
Q2 (rating: overall experience)	386	463	14.2	1.20
Q5 (most helpful aspects of seminar)	2047	2562	75.3	1.25
Q6 (aspects of seminar to be improved)	693	746	25.5	1.08
Q8 (other comments)	663	810	24.0	1.22
Post-primary				
Q1 (rating: overall seminar)	76	97	15.3	1.28
Q2 (rating: overall experience)	74	86	14.9	1.16
Q5 (most helpful aspects of seminar)	356	430	71.5	1.21
Q6 (aspects of seminar to be improved)	141	153	28.3	1.09
Q8 (other comments)	126	142	25.3	1.13

Themes in the commentary from primary and special school respondents

Most helpful aspect of the seminar: 75% of primary and special school respondents commented on helpful aspects of the seminar. This is considerably higher than responses on the other questions (14-25.5%), and in itself, is indicative of the overall high levels of satisfaction with the seminars among respondents. The content analysis of these comments indicated that participants most frequently appreciated the opportunity to learn about the DLF and begin formulating their Digital Learning Plans and/or learn how to implement the six-step planning process (37%); 16% commented positively about materials or resources provided during the seminar; 9% commented on the practical aspects of the seminar; a

further 9% or so appreciated the opportunity to learn by collaborating and sharing with their colleagues, many of these welcoming the hands-on approach. The remainder of the comments mentioned the presenters, seminar content, and/or were more general in nature. The content of the comments also indicates that participants welcomed the guidance on the six-step process and the development of actions and targets; participants also commented that they appreciated information about apps and websites to support their digital learning and for use in the classroom.

Aspects of the seminar that could be improved: 25.5% of respondents made a comment in response to this question, and in fact, 15% of the comments received were positive in tone. Much of the commentary can be attributed to the perceived need for more time to cover the material more fully and to explore and reflect on further examples, etc.: about 59% of comments mentioned the time allocated to specific parts of the seminar (e.g. planning, exploring apps), practical examples and/or pace of delivery, and underpinning all of these was a desire for more time, and in some cases, greater levels of support. Some participants (4% of those providing comments) remarked that this training should be available to all teachers. A small number of participants commented that a hard copy of the DLF manual should be made available to all teachers and/or wanted a copy of the presentation slides.

Overall experience of the seminar: 14% of respondents chose to make a comment on their overall experience of the PDST Technology in Education seminar. Of these comments, 72% were positive in tone, and 28% were negative. Half of the positive comments were general in content, while about 25% praised the seminar presenters. The remainder of the positive comments concerned the organisation of the seminar, seminar materials, learning activities or seminar venue. Two-thirds or so of the negative comments concerned the seminar venue and/or technical issues that arose during the seminar. A further 13% or so concerned the organisation of the seminar. The small number of remaining negative comments concerned feeling overwhelmed (e.g. with the number of initiatives in the school) and/or the catering at the seminar venue.

Overall rating of the seminar: 14% of respondents chose to make a comment on their overall experience of the PDST Technology in Education seminar. Of these comments, 73% were positive in tone, and 27% were negative, which is quite similar to the overall experience commentary (above). About 36% of positive comments concerned the presenters, while a further 38% of positive comments were general in nature. The remainder of the positive comments concerned the seminar content, pace of delivery, learning materials, and/or learning activities. Of the negative commentary, 40% concerned materials: some respondents expressed disappointment that participants were not provided with a copy of the Digital Learning Framework to take home for each school. A few participants also mentioned that a copy of the PowerPoint slides of the presentation would have been useful. A further 43% of comments concerned seminar content, learning activities or pace of delivery. Regarding these, some participants wanted more time to work on their Digital Learning Plans, and some felt that there was too much material to work through in the time available.

Other comments: 24% of respondents provided additional comments; 87% of these were positive in tone, while 13% were negative. Fifty-seven percent of the positive comments

were general in nature while 41.5% of the positive comments concerned the presenters (with the remaining 3% on other topics). About 20% of the small number of negative comments were general in nature, while 22% were critical of the time required and/or mentioned initiative overload. The remainder of negative commentary included the view that training should be provided to more/all staff, the need for more time and/or funding to implement the DLF, and/or technical difficulties experienced during the seminar.

Themes in the commentary from post-primary school respondents

Most helpful aspect of the seminar: 71.5% of post-primary respondents commented on helpful aspects of the seminar. As with primary schools, this is considerably higher than responses on the other questions (15-28%) (and can be taken as confirmation of the overall high levels of satisfaction among post-primary participants with the seminars). The content analysis of these comments indicated that participants most frequently appreciated the opportunity to learn about the DLF and begin formulating their Digital Learning Plans (43%); 21% commented positively about materials or resources provided during the seminar including the app and software examples; and a further 14% commented positively on the opportunities to network with staff in other schools. About one in nine of these comments (11%) praised the learning activities and practical, hands-on approach and about 5% praised the presenters. The remaining comments were general in nature.

Aspects of the seminar that could be improved: 28% of respondents made a comment in response to this question, and in fact, 16% of the comments received were positive in tone. As with primary level, much of the commentary can be attributed to the perceived need for more time to cover the material more fully and to explore and reflect on further examples, etc.: about 67% of comments mentioned the time allocated to specific parts of the seminar (e.g. planning, exploring apps), practical examples and/or pace of delivery, and underpinning all of these was a desire for more time, and in some cases, greater levels of support. Some of these comments suggested a desire for more focus or time on specific aspects, including timelines and evaluating progress. A small number of respondents indicated that *less* time would have been required, but these were a minority: others suggested a follow-up seminar would be helpful. About 5% of the comments concerned technical difficulties and the remainder of commentary was general in nature.

Overall experience of the seminar: 15% of respondents chose to make a comment on their overall experience of the PDST Technology in Education seminar. Of these comments, 75% were positive in tone, and 25% were negative. About 46% of the positive comments were general in content, while 26% praised the seminar presenters. The remainder of the positive comments concerned the seminar content, learning activities, and/or opportunities to collaborate with other schools. Two-thirds or so of the negative comments concerned the seminar venue and/or technical issues that arose during the seminar. A further 13% or so concerned the organisation of the seminar. The small number of remaining negative comments concerned feeling overwhelmed (e.g. with the number of initiatives in the school) and/or the catering at the seminar venue.

Overall rating of the seminar: 15% of respondents chose to make a comment on their overall experience of the PDST Technology in Education seminar. Of these comments, 73% were positive in tone, and 27% were negative, which is quite similar to the overall

experience commentary (above). About 63% of positive comments were general in nature, while 24% concerned the presenters. The remaining 9% or so praised the seminar content. Of the small number of negative comments, about 65% concerned the seminar venue (room/space or technical issues) and the remaining 35% concerned the organisation of the seminar and/or seminar content.

Other comments: 24% of respondents responded to this; 87% of these were positive in tone, while 13% were negative. Sixty-eight percent of the positive comments were general in nature while 30% of the positive comments concerned the presenters (with the remaining 2% on other topics). About two-thirds of the small number of negative comments concerned the time required for planning and/or pace of delivery. Some of these comments included suggestions such as the provision of more support to schools or the development of a more centralised data collection/survey tool for baseline measurement and evaluation. The remainder of negative commentary was general in nature.

4.3 Themes emerging from focus groups with the PDST Technology in Education team

The topics that arose are organised in this section under the following broad themes:

- Seminar preparation and content
- Seminar attendance
- National rollout challenges
- DLF & SSE.

In a few of the interview excerpts that are used in this chapter for illustrative purposes, the precise word was not captured in the transcript. In these instances we have put square brackets around the word/phrase in question.

4.3.1 Seminar preparation and content

Advisor training and knowledge sharing

In all, there were ten primary advisors, five post-primary advisors, and the PDST-Tech in Ed team lead. PDST advisors described how knowledge gained from the Trial phase of the DLF evaluation was shared with new members of the PDST-Tech in Ed team both formally and informally. The formal techniques included national team meetings, writing up case studies of particular schools, shared online folders, mentoring new members one-on-one, co-presenting seminars with new members, and doing practice run-throughs of seminar presentations.

One advisor pointed out that a previous Deputy Director of the PDST had completed a Master's degree in mentoring, and that the mentoring model she had developed for the PDST largely informed how the PDST-Tech in Ed mentoring worked for the DLF Trial. This involved some shadowing, and meant that new members always had a more experienced person to ask questions to. Some found this mentoring particularly helpful:

"It was the mentoring really that I found the most [insightful] because you had that person to talk to...It started mid-year, so it was more of the mentoring really that you had somebody to actually ask the questions to."

The advisors noted that there was a high level of informal interaction among the team throughout the process. This, in their view, helped newer advisors gain a more nuanced

understanding of the issues they could expect to encounter, which may not have been covered in the formal training. All were in agreement that this sharing of anecdotes was a key part of how knowledge was passed on from experienced advisors to newer ones, and also between experienced advisors.

Relatedly, the PDST advisors frequently cited the culture of openness and collaboration in the PDST-Tech in Ed as an important factor which enabled effective knowledge sharing. This culture existed throughout the year, and meant that new advisors felt comfortable approaching others whenever they had queries.

"The culture is very open towards you know helping new people ...It was ongoing for a while, it wasn't an initial [induction] and then you went off...it was ongoing throughout the whole year, and I think we just didn't really feel that we were on our own doing it. It was very collaborative."

This open and collaborative style was further enabled, they noted, by the use of a mobile phone messaging application, which advisors frequently used to ask questions of each other.

"we communicate online a lot, we've [messaging app] so we've very open channels [of] communication with each other."

Seminar design and content

Advisors reported that the design of the seminars was originally planned to take a month, but that "things had shifted over the summer", meaning that, in reality, this was completed in less than three weeks. Contributing to the design of the seminars were two post-primary advisors, two primary advisors, and a team leader. This team created the seminar using knowledge gained from the DLF Trial phase. The advisors noted that while the content was primarily decided upon by the design team, there was a lot of collaboration with other advisors and the Inspectorate as well. Based on their experience in the DLF Trial, the advisors "had a number of messages that [were] important to transmit" when it came to designing the seminar content. This was done in meetings with the design team, which the advisors mentioned were highly "constructive" and collaborative. Emphasis was also placed on the consistency of the message:

"We had a script for delivery which we all obviously adopted slightly to suit our speaking style, but I think I would say that the content was uniformly delivered across the board."

This consistency ensured that teachers and school leaders attending the seminars across the country received the same information, and that advisors could be confident that their advice to schools would be consistent with the advice of education centres, the Inspectorate, or other advisors. The advisors commented that their experience in the trial phase was invaluable in informing the seminar content. Their frequent team meetings throughout the trial meant that they were aware of what worked for schools and what didn't, when it came to implementing the DLF:

"throughout the full year of our trial we were continuously reflecting on and listening to each other's experience of what worked with the trial"

Advisors also mentioned getting significant input and constructive criticism from the Deputy Director:

"He really challenged us within a very positive respectful way, and we had really great kind of frank conversations..."

The seminar design that resulted was then signed off by the PDST Deputy Director for research design. About a week after this approval had been received, the design team had a "critical friends" day. This involved meeting with an Inspector to get feedback on the design and content of the seminars. The advisors pointed out that the content of the primary and post-primary seminars was nearly identical, apart from a recognition in the post-primary seminars that there was a tradition of having a designated IT person in the school. On that note, one advisor commented that:

"in primary schools you could be going from here [Dublin] to Cork before you actually meet somebody who has a designated…post"

4.3.2 Seminar attendance

School notification of seminars and attendance

The advisors mentioned a number of ways in which schools were notified about the seminars. Education centres sent out posters to schools at the beginning of the year. Letters and emails were also distributed to schools, and the PDST sent out text messages to school principals alerting them about the upcoming seminars. The PDST-Tech in Ed shared information about the seminars on Twitter as well; however, they noted that many seminar attendees were not on Twitter, and that, when it comes to digital technologies:

"when you're using Twitter as your platform to advertise something, you're preaching to the converted"

Despite this multimodal approach, advisors remarked that "there were a lot of people who were surprised that the seminars were happening or that they'd missed them". Smaller schools, as well as community and comprehensive schools, were mentioned as having particular issues in this regard. Word-of-mouth was frequently cited as the way by which teachers found out about the seminars. The advisors also noted that there was a lot of variation in how effectively education centres alerted schools about the seminars, and that there was no uniform approach. One advisor recalled a school telling them that they had "only heard about the seminars because the Inspectorate had recommended that they attend them".

This lack of a standardised approach across the education centres was not entirely responsible for the variation in turnout at the seminars, however. A number of advisors cited a lack of substitute cover in schools as a key reason that turnout was low in certain areas. However, this was not always a barrier to attending seminars:

"all of us had a trip to a certain part of the country...[the education centres] I know for a fact rang up the schools separately and said "are you coming, are you not?", when there were issues with sub cover and in that area there were a lot of smaller schools, sub cover was an issue, but they still have a higher overall turnout than other areas."

In other words, while substitute cover may have contributed to low seminar turnout in some schools, it may not have been a deciding factor in all cases. This suggests a role for school-specific factors such as size and staff culture, as well as a communication role in

conveying information about the seminars on the part of education centres in seminar turnout.

There were, however, some ways that low turnout could be mitigated, the advisors felt. One advisor pointed out that seminars on Mondays and days immediately following holidays were more likely to be cancelled due to low numbers registering. Advisors also indicated that in some cases, education centres offered so many slots for seminars that few individual seminars had sufficient numbers to justify being held. This further contributed to the number of cancellations.

"[education centres] were trying to offer flexibility which led to too much of a spread"

Another advisor remarked that they found seminar turnout to be lower in urban areas than rural and commuter belt areas. They felt that this was primarily the result of the time it takes for attendees to get to the centre. This advisor noted that while some education centres in rural settings are as close as ten minutes driving time from schools, education centres in urban settings can take up to an hour to get to due to traffic:

"[The education centres] warned people that, like it was a nine thirty start but...to be there for nine [I] was leaving at seven...because it was such a built up...city centre area."

The advisors felt that another contributor to low seminar turnout was confusion among school leaders about whether it was mandatory to have a Digital Learning Plan set up in their school. They cited vague language in the Department circulars as one source of this confusion. The timing of the Circular's release was also commented on:

"the Circular that came out nearly at the end of the seminars was the one that was suggesting that everyone should attend the digital learning framework seminar, that should have been sent out in September the year before"

"It was partly the time frame; [schools] were given two weeks."

There were other factors that advisors felt were within the control of education centres to change. They noted that many teachers reported having difficulties using the education centre websites to register for seminars. In many cases, when this happened:

"[the teachers] ended up just either giving up or having to ring the education centre and then because of a lack of numbers the education centre might cancel the seminars - It happened pretty much in every centre."

One advisor quoted a teacher as saying:

"I registered three different times and in each case, it was cancelled."

Centralised communication (e.g. from the Department of Education and Skills)

Advisors reported delivering between ten and thirty seminars each, with most delivering somewhere in the low twenties. Many reported that they would have delivered more, were it not for the high number of cancellations. To solve this, some advisors endorsed the use of the PDST central booking system, subject to it being able to handle the volume of applications.

Another suggestion had to do with whom the message about the seminars should come from. Many advisors were of the opinion that the Department of Education and Skills should tell schools about the seminars, rather than the education centres, because:

"...if it was coming from the education centres, it gave the impression to schools that it was an optional thing."

It was felt that a message from the Department of Education and Skills would be taken more seriously by schools than one from the education centres:

"There's a big difference between getting something from the Department and getting something from your local education centre."

"if it had the Department of Education on it, you'd be very sure that wouldn't go unnoticed."

There was strong agreement that any such message from the Department concerning professional development should be accompanied at the same time by information on linked funding. These comments referred to a Department circular which had been distributed to schools in March 2019. The circular stated that in addition to €45m which had been issued automatically to schools, €5m was allocated for "top-up funding" available on application to schools demonstrating evidence of their engagement in digital strategy initiatives, including the DLF seminars. There was agreement among the advisors that this would encourage seminar attendance, and it would be beneficial for similar efforts and initiatives in the future. As one advisor commented:

"If...people were made aware of [the requirement of seminar attendance for funding] in September, everyone would have gone. If extra money is sent - let's get someone there"

As such, the advisors felt that increasing turnout at the seminars could be done primarily in two ways: 1) By improving the reach and effectiveness of the messages that notify schools about the seminars, either by sending a letter on Department-headed paper, mentioning seminar attendance as a funding criterion in circulars, or both, and 2) By minimising drop-out at the seminar registration phase, through more user-friendly booking systems, and scheduling appropriate numbers of seminars.

Despite widespread agreement among the advisors that some of what is currently done by the education centres might be done by the Department instead, there was one area which they felt still benefitted from local organisation: tailored communication. As one advisor put it:

"that local touch does make a difference particularly when...a lot of schools are...very analog as opposed to digital"

Education centres appear to be best-placed to advertise the seminars to the schools in their area, as they are most aware of the context in which those schools exist, and they know the most appropriate channels for advertisement.

4.3.3 National Rollout Challenges

"The [attendees] leave the seminar and they have great intentions but then they get sucked back into the busyness - the chaos of school"

Initiative overload and buy-in

According to the advisors, a key challenge for DLF implementation in schools is placing digital technologies high on a list of competing demands, and giving this consistent attention in the important early stages. Implementation of the DLF requires that schools find the time to establish a Digital Learning Team, develop a vision for digital teaching, learning, and assessment, and meet regularly to assess progress towards this vision. A number of advisors at both focus groups thought that many schools were falling behind in their implementation of the DLF simply because they did not have enough time to dedicate to the DLF, given their other obligations and that it was key to have support from management to communicate the priority of the DLF among school staff.

"Schools involved in the trial where I find that worked most successfully were schools where there was buy-in from senior management ... as well as initiative"

Another impediment related to this prioritisation was difficulties in achieving whole-staff buy-in. Advisors reported that schools experienced difficulties when trying to get all of their staff to embed digital technologies in their teaching, learning, and assessment practices. Part of this lack of buy-in, some advisors thought, may have been due to the way in which staff viewed being asked to start working on *yet another initiative*:

"There are so many different priorities"
"There's so many committees"
"a lot of them did come back to feeling overwhelmed by initiatives"

Staff in many schools felt overwhelmed by the sheer number of initiatives which run at the same time, and which must be prioritised with the school's broader aims in mind. Additionally, the DLF is seen by many school staff as something which requires a technical mindset and an interest in technology:

"generally what I'm seeing as happening is it's left to just the tech people because they're interested and then it's kind of damned from the beginning because it's seen as a tech thing."
"only those that are interested in tech are on, and they're probably people like me who are teaching computers in the school and therefore the [objection] straight away are it's a tech thing. That's a big challenge I've seen now in every school."

This problem of staff buy-in was at times compounded by confusion in the school leadership about what exactly was required of them. One advisor said:

"[one school's Digital Leader] basically told me that he had thrown in three or four standards or statements despite having attended the seminar and having being told at the seminar that you only need one…he still hadn't got that the message was to keep it simple"

This lack of clarity from school leadership, as well as a misperception among staff about what is required to embed digital technologies in their practice, likely contributed to a lack of whole staff buy-in. Advisors felt that this could be rectified if more staff had attended the seminars, and if schools had better access to support after they had attended the seminars.

Support and infrastructure

This support, they said, was also needed for schools to address the more basic infrastructural and technical issues they faced when beginning to implement digital

technologies into their practice. These basic infrastructural issues tended to dissuade even staff who had bought into the idea of implementing the DLF:

"the Wi-Fi goes down or the computers take ten minutes to start up... There are these issues that will discourage your average teacher who may or may not be interested in using it because it's not fit for purpose in a lot of schools"

Problems with digital technology infrastructure ranked highly among the main reasons that many schools felt unable to properly implement the DLF:

"if there was negative feedback it was generally, I've no time, I've no resources, broadband was a big issue"

The lack of a centralised technical support model for schools was cited by advisors as a significant barrier for schools. One advisor said that "fifty percent of the questions we get are probably tech support if not more". The demand for this support is something the PDST digital technology advisors are not equipped to meet, as one points out:

"we are teachers, not technicians - and they [the roles] have to be separated"

The advisors repeated a need they had stated in previous years for dedicated staff to handle this requirement for support – one for pedagogical support, and another for technical support. One advisor felt that the latter of these roles could be played by an "IT person" in the education centre, who would have responsibility for all the schools in that area. This move towards regionalised technical support would also address another problem which advisors had noticed and expressed concerns about: predatory business practices. One advisor shared the story of a vendor who was using school roll numbers to determine the size of the grant received by various schools, and then calling the schools to sell them a projector for a value just under the grant amount. This was not a once-off incident:

"Three different schools that I went to in that area had the same thing happen"

This decision to purchase this projector, itself a poor use of the grant money, could have been prevented, the advisors felt, if schools were in the habit of contacting a technical support professional in their local education centre (or other local support centre or structure). Related to this is the issue that many schools fail to appropriately prioritise their digital infrastructural needs:

"I was in the school last year and they'd very poor Wi-Fi and they've spent their grant money to date on replacing the computers for the teachers, and...we would say, why are you doing that?...fix the Wi-Fi first. Or does it need to be a computer, could it not be a Chromebook which is much cheaper, and it can be moved around the school rather than a PC?"

Again, this guidance is something that the advisors felt was needed in many schools, and they felt that it should come from designated IT professionals in education centres. The advisors also felt that they themselves had a role to play in the continued support that schools need as they transition to using digital technologies in their teaching, learning, and assessment. This is because even when seminar attendees have found the seminars productive, they begin to forget key messages over time:

"they have the message but then the message gets diluted over time"

As the advisors conceded, this dilution of the message is only to be expected – schools have several different priorities, of which the DLF is but one. Nonetheless, the importance of some level of continued support was underlined by one advisor, who mentioned that upon his return to a school a few weeks after the seminar, he found the teachers anxious and unable to recall some of the seminar's key messages. The advisor was able to address this, but as he pointed out:

"that's only because I was able to go to that school and we [have] by no means been to every school that has been down at the seminar."

In addition to this, advisors reported a high demand from teachers for another seminar day which focused on digital tools; specifically on when and how to use them. As one advisor remarked:

"the Department's message was 'here's the process', but if you don't have the skills to put in place then what's the process being used for?"

Another advisor pointed out an interesting difference in how teachers and students were being taught in this regard:

"if you were talking about the students in class, you'd teach them the skills and then do the assessment on how they have gone about using them. Whereas with the adults and the educators we did it the other way around".

Funding and maintenance

As such, it is reasonable to assume that many schools fall behind in their implementation of the DLF in part due to a lack of continued support, both technical and pedagogical. As it stands, staff attend one seminar, and then they are required to go back to their school and implement the DLF across the whole school, frequently with unreliable equipment and no external support (noting that online support is available at DLplanning.ie). This takes place while other initiatives compete for their time and attention. The advisors strongly felt that the continued support required to buttress staff efforts would necessitate continued funding as well. One asked:

"What happens when the set of fifteen iPads that were bought in 2016 have gotten to the end of 2020 and they are coming towards the end of their [lifespan]?"

Other advisors pointed out that while schools were given money for new devices, they were not given any funding for maintenance. Indeed, in their view, the Department Circular which mentioned funding was worded in a way that precluded maintenance as a valid use of funding. The advisors were in agreement that adequate funding for maintenance was vital for the continued success of the DLF. One mentioned an example from the private sector, where workers were given new laptops every year. While the advisors agreed that annual replacement of equipment is not necessary for the DLF, a commitment to the upkeep of devices was noted as a significant gap. Some advisors remarked that even if maintenance funding was provided, however, the basic funding for the DLF was insufficient to achieve its aims:

"The funding sounds big but the reality is the funding is fifteen to possibly twenty devices for [the] school to be shared...[between] two hundred to two hundred and fifty students...I get access to this technology once a week for about an hour a week. Really, what impact does that make?"

Other advisors mentioned that confusion about who was responsible for insuring and repairing devices when they were being shared between schools in clusters was also an issue. On the whole, the advisors saw a transition to digital technologies as a gradual and long-term investment, requiring continuing financial, pedagogical, and technical support. They felt that the current funding is inadequate to achieve this.

Sources of support

The advisors mentioned that schools can apply for continued support via the PDST, putting digital technologies first on their list of three priorities. One advisor highlighted the importance of additional school visits:

"all of [the teachers] universally said, 'we probably would have given up if we had only one visit because we tried stuff, it didn't always go to plan but there was, first of all the push that we knew somebody was coming back in to visit'"

This underscores the need for continued support especially in the early stages of schools' DLF implementation. Importantly, however, this advisor also noted that:

"as the sustained support went on, they nearly stopped talking to me or stop needing me by the end of it"

This indicates that while schools need more assistance than just the seminar, continued assistance can taper off as schools become more self-sufficient over time. On this note, advisors pointed out that webinars and an online course are also available for schools, both of which were deemed to have been useful supports so far. Some seminar attendees were given workbooks which included case studies of schools implementing the DLF. These were intended to be used as reference material as schools began to implement the DLF in their own schools.

However, one advisor expressed doubts about the potential of these supports to help schools who were less motivated to implement the DLF. These schools, the advisor said, wanted to be driven by external people like the PDST-Tech in Ed advisors because they could not seem to find the time to work through the DLF themselves. They noted a role for Inspectors here as well: they recommended that Inspectors ask to see Digital Learning Plans during their school visits. Advisors commented that they were aware that this was already happening in some cases, but that they did not believe it was the norm yet.

The advisors expressed a hope that while they would not be able to provide the same level of support in a nationwide rollout as they had done for the DLF so far, the school clusters could act as a substitute for this support in the national rollout. While the exact details of how clusters will be organised had not been worked out at the time of the focus groups, advisors thought that they would operate across the country via education centres or in the schools themselves. The advisors reported that in their experience, schools had overwhelmingly found it useful to get together and share information and anecdotes with each other about embedding digital technologies in their practices. One advisor recounted the experience of two schools meeting, one of which was advanced in its level of embedding, while the other was just beginning:

"you could see the connections swarming back, they were swapping numbers and inviting the beginning school to come and observe what was going on in their schools. So, you know there was definitely that networking"

This kind of learning and sharing of experiences was especially effective in reducing schools' anxiety about implementing the DLF, the advisors found. Seeing another school successfully navigate their implementation of the DLF was encouraging to schools which were less advanced in this regard:

"the school that had gone down this road already were able to share their experiences, and one of the people from the other school was...very concerned around the use of digital technologies. And his fears were greatly allayed...sometimes there's nothing like hearing it from another school"

This theme of schools listening to other schools appeared frequently in the discussions with the advisors, with many feeling that this was part of the solution to the lack of continued support mentioned previously.

4.3.4 DLF & School Self Evaluation (SSE) Links

Advisors reported that while it was possible for schools to integrate the DLF with their SSE, this did not happen in many cases. Part of this, they said, was due to confusion among schools about how the DLF aligned with SSE. The Inspectorate had published a note to schools in late December 2018 outlining three ways by which the DLF and SSE processes could be linked. The advisors felt that if the same note had been published in September instead, schools would have had more time to integrate these two processes. Because schools were already three months into carrying out their plan by December, they felt there was no point in going back and changing how they integrated the DLF into their SSE. One advisor said:

"if they had known earlier that they could kill two birds with one stone...they would have done that"

As such, it appears that giving schools information early on in their implementation of the DLF is key.

Additionally, other advisors commented that a large number of schools had chosen to focus on oral language as the focus of their SSE. This meant that it was more difficult for them to integrate the DLF into their SSE the same time. Despite, this, an advisor pointed out that in one of their visits to such a school, they had encouraged the staff to think:

"Okay, how can digital technology be used for you to capture the development in the oral language? And even to give that pause and let them say, 'a tape recorder', brilliant."

In this way, it becomes possible for schools to integrate their DLF and SSE processes even when their SSE is primarily focused on other areas. Again, this underscores the value of additional guidance to schools after they have attended the seminars. This is especially true for schools where the management and school leaders do not prioritise digital learning. However, one advisor pointed out a practical reason that rigid adherence to aligning the DLF with SSE may not be in a school's best interest. They gave the example of a school which had very poor Wi-Fi, and decided to focus on improving that, rather than on assessment, as

the school's SSE would have mandated. The advisors felt that in cases like this, a focus on the immediate needs of the school is sometimes a prerequisite to achieving the higher-order goals of the DLF and SSE. Then, once these needs are met, the school is in a position to align the two processes.

"Most schools would be like that, so they might do [a] one-year kind of digital learning planning as opposed to 'SSE', and then look to align it later on perhaps"

Advisors also expressed some uncertainty on the part of school staff about how steps one and two of the six-step planning process linked in with SSE. It was their experience that school leaders would tend to identify a focus and a statement for their SSE, and would then be unsure about what questions to ask when gathering data. One advisor reported their experience with one school:

"They didn't know what was to form those questions and [the] idea that you have to... form the questions from the statement, and that was a lightbulb moment for lots of people. So, I spent a lot of time on that... and then connection from one step to step two."

Advisors also noted that DEIS schools had particular difficulty aligning the DLF with their SSE. This is due to the fact that the DEIS SSE differs from the SSE in non-DEIS schools, and the DLF was designed with non-DEIS SSE in mind . An advisor even said of themselves that they were unsure how the DLF aligned with SSE in DEIS schools. This led to DEIS schools seeing the DLF as an "add-on", rather than as something which naturally links in with SSE in DEIS schools:

"Something that arose for us over the course of the seminar was that a mainstream school can have their 'SSE' and digital learning framework and it can be one plan and that's acceptable. But in a DEIS school they still have to have...an 'SSE' plan, a digital learning plan and a DEIS plan that has all of the different facets to it. So, again, they're drowning in paperwork when 'SSE' was meant to be the one plan through them all."

Finally, the advisors pointed out that the main reason that schools have overwhelmingly chosen the Teaching and Learning dimension of the DLF instead of the Leadership and Management dimension is that the former is currently the only focus schools are permitted to have for their SSE. It may be that many schools would benefit from addressing issues with leadership and management before turning to teaching and learning, but that is not possible at this stage for schools who are interested in having the DLF align with their SSE.

4.4 Key points from Chapter 4

4.4.1 PDST Technology in Education seminar evaluation

Participants' experience of the PDST Technology in Education seminars was extremely positive, with large majorities of attendees from primary, post-primary and special schools expressing positive views about seminar content, the practical approach taken, time given to planning, and the opportunity to network or collaborate with staff from other schools. Levels of satisfaction with the seminars were broadly similar at primary and post-primary levels, although post-primary level respondents were less happy with the prior notice and information about the seminar than primary level respondents.

Furthermore, participants' self-rated levels of knowledge about the DLF, digital learning, constructivism, the six-step planning process, and monitoring and evaluating implementation were higher after having attended the seminar in a large majority of

respondents, and in particular, among respondents who had lower levels of familiarity prior to attending the seminar. Somewhat lower gains in level of reported familiarity with digital learning (in general) were found at both primary and post-primary level in comparison with the other four items. This could suggest a perceived need among school staff to increase their knowledge of what digital learning looks like in specific teaching and learning contexts (and this suggestion is borne out in the analysis of respondents' text commentary).

Respondents' reported levels of confidence with implementing the various steps involved in the DLF and their schools was also high among a large majority. However, these data suggest a somewhat higher level of confidence among post-primary than primary teachers. Post-primary respondents were more likely than primary respondents to rate themselves as more confident than primary respondents in establishing a DL team, the six-step planning process, and gathering and evaluating data.

Overall, these findings strongly confirm that the preparatory work of the PDST Technology in Education, the content of the seminars and their design were very well suited to the diverse needs of participants. The most common criticism expressed was the perception that more time was needed to go more thoroughly through the materials and have more opportunities to plan, network and examine case study examples and digitally-embedded teaching and learning in practice. A minority of seminars (and, it seems from participants' reports, slightly more at post-primary than primary) were negatively affected by technical issues and a small number of participants commented negatively on seminar organisation.

4.4.2 PDST Technology in Education focus groups

Seminar preparation and content

- There were ten primary advisors, five post-primary advisors, and a post-primary leader on the PSDT-TiE team.
- Knowledge gained from the Trial phase of the DLF was formally shared with new members of the team via national team meetings, written case studies of schools, shared online folders, one-on-one mentoring, co-presenting of seminars, practice run-throughs of seminars.
- Informal knowledge sharing also took place, which involved sharing anecdotes and using mobile messenger applications to keep in contact. A general culture of openness and collaboration persisted throughout the seminar phase and beyond, which was frequently cited as being an important factor in the seminars' success.
- The seminar was designed by the design team in collaboration with other PDST-Tech in Ed members, and signed off on by the PDST Deputy Director for research design. After this, a "critical friends" day was held, wherein advisors met with the inspectorate for feedback on the seminar design.
- The seminar content was almost identical for primary and post-primary schools, and great emphasis was placed on keeping the seminar content consistent throughout the country.

Seminar attendance

- Schools were notified of the seminars mainly through their local education centres, which sent out posters at the beginning of the year, as well as letters and emails. The

PDST sent out text messages to school principals alerting them to upcoming seminars. Twitter was also used to alert schools about the seminars.

- Many schools were apparently unaware that seminars were taking place. A number of schools reported finding out about the seminars by word of mouth.
- Even when they had received notification about the seminars, some schools were not able to send any staff to them due to a lack of substitute cover.
- Long commuting times to education centres was also cited as a reason for low turnout in certain areas; particularly in urban centres.
- Low seminar turnout was also attributed to education centres providing too many dates for seminars, leading to undersubscription for many particular dates, and then to seminar cancellations.
- Some advisors reported that many teachers had difficulty using the education centre websites to register for seminars, which also led to lower uptake.
- To address attendance issues, advisors suggested that:
    - The Department of Education and Skills rather than education centres should initially tell schools about the seminars.
    - Attendance at the seminars should be mentioned as a prerequisite for receiving DLF-related funding in Department Circulars.
    - Communication to schools as the seminar dates approach should be done via the education centres, which could review and, if needed, update their registration systems to be more user-friendly.

National rollout challenges

- A key challenge noted by advisors was the prioritisation of the DLF among many other school initiatives which competed for staff attention – "initiative overload". The time investment required for DLF implementation was cited as being one reason that some schools were falling behind.
- The perception among some staff that the Digital Learning Team, and thus the DLF, was suitable only for people who had a technical mindset, led to a lack of buy-in in some cases. Advisors felt that continued support after the seminars could rectify this somewhat.
- Advisors mentioned that the PDST were one source of continued support that schools could avail of, as were DLF webinars and an online course. They also expressed their hopes that the school clusters would prove to be useful methods of support in the future.
- Basic problems with digital technology infrastructure hampered many schools' efforts to implement the DLF. Problems like unreliable Wi-Fi and slow computers caused disillusionment even among staff who were committed to the DLF.
- The advisors expressed some concern and frustration that there was no regionalised technical support model for schools to solve these issues. Despite not being IT experts, they estimated that over half of the queries they got from schools were of a technical rather than a pedagogical nature. A related problem was that of predatory business practices, whereby businesses would sell school technology that they did not need, but were not aware that they did not need due to their own level of technical know-how.
- Insufficient continued support to schools after the DLF seminar was mentioned by a number of advisors as an issue that would significantly hinder the successful rollout

of the DLF. This support needed to be both technical and pedagogical, and they felt that these roles should be separate.

- Lack of funding for maintenance was mentioned as being a significant impediment to the long-term success of the DLF. Advisors noted that while there were funding provisions for new devices, there was no funding allocated to maintenance or upkeep of these devices.

DLF and School Self Evaluation links

- The advisors pointed out that schools have overwhelmingly chosen to focus on the Teaching and Learning dimension of the DLF, rather than the Leadership and Management dimension. This, they said, was because the former is the only focus they are currently allowed to have for their SSE.
- Despite this, advisors mentioned that in many cases, schools did not integrate their DLF and SSE processes. Common reasons for this included:
    - A large number of schools already had oral language as the focus of their SSE, meaning that they found it difficult to incorporate the DLF mid-cycle.
    - The inspectorate published a note to schools in late December of 2018, outlining how the DLF and SSE could be linked. Advisors felt that this was too late, as schools were already a few months into implementing their SSE plans at this stage.
    - Some schools decided to familiarise themselves with the DLF and digital learning plan first, before joining it with their SSE activities.
    - There was a lack of clarity about how steps 1 and 2 of the 6-step planning process related to SSE.
    - DEIS schools had difficulty linking the DLF and SSE because along with these two plans, they also have to create a DEIS plan. Having to complete each of these plans in an integrated was viewed as being too cumbersome.

Chapter 5: Implications from the DLF baseline findings

This report presented the results of the DLF national longitudinal evaluation study at baseline stage, with data from three sources (baseline survey, DLF seminar evaluation survey and focus groups with the PDST Technology in Education) collected between October 2018 and June 2019.

This chapter does not provide a summary of results: refer to the Executive Summary at the beginning of the report for the key findings.

In this chapter we draw the findings from the three sources together to identify a set of six implications and suggestions.

5.1 Opportunities for collaboration and shared learning

A consistent finding in the commentary from seminar participants was that they welcomed the opportunity to network, collaborate and share their learning during the DLF seminars. This contrasts with the low levels of priority given to liaising with other schools as a possible strategy to implement the DLF.

One promising development related to this theme is the plans of the PSDT TiE to continue DLF implementation support in the second year through that of online (blended) communities of practice, which commence in November 2019. These could be used as a basis for building collaborative relationships between schools. They would, however, would be of highest benefit for school staff who are already engaging with digital technologies to a moderate or high level of competence. This indicates a need to explore other ways to enable collaborative learning and networking.

Implications: Given the high value placed on the opportunities to network and collaborate by DLF seminar attendees, it would be worth further exploring and developing ways for staff to collaborate and network with one another to share their experiences and learning as they implement the DLF, both in online and face-to-face settings. The plans of the PDST Technology in Education to support the DLF in its second year through online (blended) community of practices are welcomed.

5.2 Technical support and maintenance

Consistent with the DLF Trial findings, technical support was singled out by school staff and PDST advisers as a significant obstacle to DLF implementation in many schools. While progress can be made at system level with implementing the DLF, particularly given strong evidence at the Field Trial stage that significant improvements had occurred in a majority of schools, along with the development of a culture of collaboration and shared learning, many schools will remain at a disadvantage in the absence of structured, efficient technical support and maintenance.

It was noted in Chapter 1 that a range of strategic supports and resources has been developed to support the *Digital Strategy for Schools 2015 – 2020* (of which the DLF is a key component), including professional development supports, a coherent online suite of resources, tools and information at www.DLplanning.ie, and 210 million euro in funding via the ICT Infrastructure Grant (of which 110 million euro has been allocated). However, the ICT Infrastructure Grant does not explicitly allow for technical support and maintenance, and the commentary from the PDST Technology in Education (as well as findings from the Trial stage of DLF implementation) suggest a need to continue to examine technical support and maintenance needs of schools, taking these local variations into account.

A promising finding under this theme is that many schools (a little in excess of half of all schools across primary, post-primary and special schools) indicated that exploring shared technical support solutions with neighbouring schools could be a possibility.

Implications: It is suggested that the work of the DES' Technical Support Working Group be supported and prioritised. Given the willingness of many schools to work with other neighbouring schools in establishing technical support solutions reported through the baseline survey, there is merit in exploring the clustered provision of technical support further, possibly by piloting technical support in clusters of schools. This could be considered against potential cost savings in the medium term.

5.3 Connectivity

Findings confirm, consistent with those of the Field Trial phase of the DLF evaluation, that schools vary widely with respect to perceived levels infrastructure and connectivity and in particular, at primary level across schools with small, medium and large enrolment sizes (with generally markedly less favourable circumstances in small primary schools).

As noted in Chapter 1, currently, all post-primary schools have access to broadband in excess of 100 Mbp/s symmetrical upload and download speeds. It is envisaged that up to 1,800 primary and special schools will have 30 Mb/s broadband connectivity by the end of 2020. A further 700 primary schools are located in the National Broadband Plan intervention area, with subsidised broadband provision planned for these schools. The remaining schools will need to rely on industry providing the required infrastructure.

Implications: To support the implementation of the DLF in primary schools that do not have adequate or reliable Internet connectivity, it is suggested that tailored, offline tools and resources are needed. As the DLF evaluation continues, it will be of interest to monitor the rollout of the National Broadband Plan.

5.4 Communicating about and organising CPD

From the seminar feedback survey and the PDST Technology in Education focus groups, some issues with leading on and communicating about the DLF seminars were identified.

Many schools had not been aware that the seminars were taking place; some experienced difficulties in registering; and some were affected by seminar cancellations.

Implications: It is suggested to review and enhance the booking and communications processes between education centres and schools for CPD and other events. It is further suggested to identify and implement ways to increase system-level awareness of high-priority CPD initiatives and where applicable, any linkages with funding, for example through a DES Circular.

5.5 Understandings of 'embedding'

It is possible that the understanding of the concept of embedding digital technologies into teaching, learning and assessment varies across primary, post-primary and special schools, as well as across individual members of school staff. These differences could, in turn, give rise to variations in how schools view levels of effective and highly effective practice. This is a potentially important issue, since monitoring the implementation of the DLF depends on the valid measurement of progress made by schools in embedding digital technologies.

Implications: The longitudinal surveys will ask school staff about their understanding of embedding to gain a better understanding of this issue.

5.6 Understanding variations in schools' digital technology contexts

Embedding digital technology into teaching, learning and assessment is highly context-dependent and multi-faceted. The results presented in this baseline report provide illustrative examples of the variations in schools' contexts. It will be a priority, moving into the longitudinal phase, to understand how these variations are related to progress and change.

Implications: Further analysis into the variations in digital technology infrastructure, connectivity and technical support is suggested, and in particular, the extent to which these variations are related to progress in implementing the DLF over time.

References

Archer, K., Savage, R., Sanghera-Sidhu, S., Wood, E., Gottardo, A., & Chen, V. (2014). Examining the effectiveness of technology use in classrooms: A tertiary meta-analysis. *Computers & Education, 78,* 140-149.

Butler, D., Leahy, M, Shiel, G., & Cosgrove, J. (2013). *Building towards a Learning Society: A National Digital Strategy for Schools.* Dublin: St Patrick's College and Educational Research Centre. Online at https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/Digital-Strategy-for-Schools/Building-Towards-a-Learning-Society-A-National-Digital-Strategy-for-Schools-Consultative-Paper.pdf

Chaia, A., Child, F., Dorn, E., Frank, M., Krawitz, M., & Mourshed, M. (2017). *Drivers of student performance: Latin America insights.* Online at https://www.mckinsey.com/~/media/mckinsey/industries/social%20sector/our%20insights/what%20drives%20student%20performance%20in%20latin%20america/drivers-of-student-performance.ashx

Clerkin, A., Perkins, R., & Chubb, E. (2017). *Inside the primary classroom: What happens in Fourth Class? ERC Research Series, Report 2.* Dublin: Educational Research Centre. Online at http://www.erc.ie/wp-content/uploads/2017/12/Inside-the-primary-classroom-online-final-version.pdf

Cosgrove, J., Butler, D., Leahy, M., Shiel, G., Kavanagh, L., & Creaven, A-M. (2014a). *The 2013 ICT census in schools – summary report.* Dublin: Educational Research Centre/St Patrick's College. Online at http://www.erc.ie/documents/ict_cencus2013_summaryreport.pdf

Cosgrove, J., Butler, D., Leahy, M., Shiel, G., Kavanagh, L., & Creaven, A-M. (2014b). *The 2013 ICT census in schools – main report.* Dublin: Educational Research Centre/St Patrick's College. Online at http://www.erc.ie/documents/ict_cencus2013_mainreport.pdf

Cosgrove, J., Ní Chobhthaigh, S., Shiel, G., & Leahy, M. (2018a). *Digital Learning Framework Trial evaluation: baseline report.* Dublin: Educational Research Centre. Online at http://www.erc.ie/wp-content/uploads/2018/05/DLF-Trial-Evaluation-Interim-Report-May-2018.pdf

Cosgrove, J., Duggan, A., Shiel, G., & Leahy, M. (2018b). *Digital Learning Framework Trial evaluation: final report.* Dublin: Educational Research Centre. Online at http://www.erc.ie/wp-content/uploads/2018/10/DLF-Trial-Evaluation-Final-Report-Oct-18.pdf

Department of Education and Skills (2008). *Investing Effectively in Information and Communications Technology in Schools, 2008-2013.* Dublin: Author. Online at https://www.education.ie/en/Publications/Policy-Reports/Investing-Effectively-in-Information-and-Communication-Technology-in-Schools-2008-2013.pdf` https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/Digital-Strategy-for-Schools/Building-Towards-a-Learning-Society-A-National-Digital-Strategy-for-Schools-Consultative-Paper.pdf

Department of Education and Skills (2011a). The National Strategy to Improve Literacy and Numeracy among Children and Young People (2011-2020). Dublin: Author. Online at https://www.education.ie/en/Publications/Policy-Reports/lit_num_strategy_full.pdf

Department of Education and Skills (2015a). *Digital Strategy for Schools 2015-2020: Enhancing teaching, learning and assessment.* Dublin: Author. Online at https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-for-Schools-2015-2020.pdf

Department of Education and Skills (2015b). *Framework for Junior Cycle 2015.* Dublin: Author. Online at https://www.education.ie/en/Publications/Policy-Reports/Framework-for-Junior-Cycle-2015.pdf

Department of Education and Skills (2016a). *Looking At Our School 2016: A quality framework for primary schools.* Online at https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/Looking-at-Our-School-2016-A-Quality-Framework-for-Primary-schools.pdf

Department of Education and Skills (2016b). *Looking At Our School 2016: A quality framework for post-primary schools.* Online at https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/Looking-at-Our-School-2016-A-Quality-Framework-for-Post-Primary-schools.pdf

Department of Education and Skills (2017a). *Digital Learning Framework for primary schools.* Dublin: Author. Online at https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/digital-learning-framework-primary.pdf

Department of Education and Skills (2017b). *Digital Learning Framework for post-primary schools.* Dublin: Author. Online at https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/digital-learning-framework-post-primary.pdf

Department of Education and Skills (2019). *Action plan for education 2019.* Dublin: Author. Online at https://www.education.ie/en/Publications/Corporate-Reports/Strategy-Statement/action-plan-for-education-2019.pdf

McAteer, S., McKeown, C. & O'Keeffe, L. (in preparation). Relationships between 15-year olds' access to technology, perceived competence, autonomy and attitudes to ICTs, and their performance on PISA 2015 science in Ireland. *Irish Journal of Education.*

McKeown, C., Denner, S., McAteer, S., & Shiel, G., with O'Keeffe, L. (2019). *Learning for the future: The performance of 15-year-olds in Ireland on reading literacy, science and mathematics in PISA 2018.* Dublin: Educational Research Centre. Online at http://www.erc.ie/wp-content/uploads/2019/12/PISA-2018-National-Report-for-Ireland-03.12.19.pdf

Mullis, I.V.S., Martin, M.O., Foy, P., & Hooper, M. (2016). *TIMSS 2015 international results in mathematics.* Boston: Boston College International Study Center. Online at http://timssandpirls.bc.edu/timss2015/international-results/

Mullis, I.V.S., Martin, M.O., Foy, P., & Hooper, M. (2017). *PIRLS 2016 international results in reading.* Boston: Boston College International Study Center. Online at http://timssandpirls.bc.edu/pirls2016/international-results/

National Council for Curriculum and Assessment (2009). *Senior Cycle Key Skills Framework.* Dublin: Author. Online at https://www.curriculumonline.ie/getmedia/161b0ee4-706c-4a7a-9f5e-7c95669c629f/KS_Framework.pdf

Organisation for Co-operation and Development (OECD) (2015). *Students, computers and learning: Making the connection.* Paris: Author. Online at http://www.oecd.org/education/students-computers-and-learning-9789264239555-en.htm

Rodrigues, M., & Biagi, F. (2017). *Digital technologies and learning outcomes of students from low socio-economic background: An Analysis of PISA 2015.* Seville: EU JRC Science Hub. Online at https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106999/jrc106999_effectiveedu_wp4_final.pdf

Shiel, G., & Kelleher, C., McKeown, C., & Denner, S. (2016). *Future ready? The performance of 15-year-olds in Ireland on science, reading literacy and mathematics in PISA 2015. Dublin: Educational Research Centre.* Online at http://www.erc.ie/wp-content/uploads/2016/12/PISA2015_FutureReady.pdf

UNESCO and Microsoft (2011). *UNESCO ICT competency framework for teachers.* Paris: UNESCO. Online at http://unesdoc.unesco.org/images/0021/002134/213475e.pdf

Educational Research Centre
Foras Taighde ar Oideachas

www.erc.ie/dlf

ISBN: 978-0-900440-80-9 (pdf)